GF Herringbone Rigid Metal Lath

The General Fireproofing Building Products
Youngstown, Ohio

Herringbone
Rigid Metal Lath

BETTER PLASTERING
ON METAL LATH

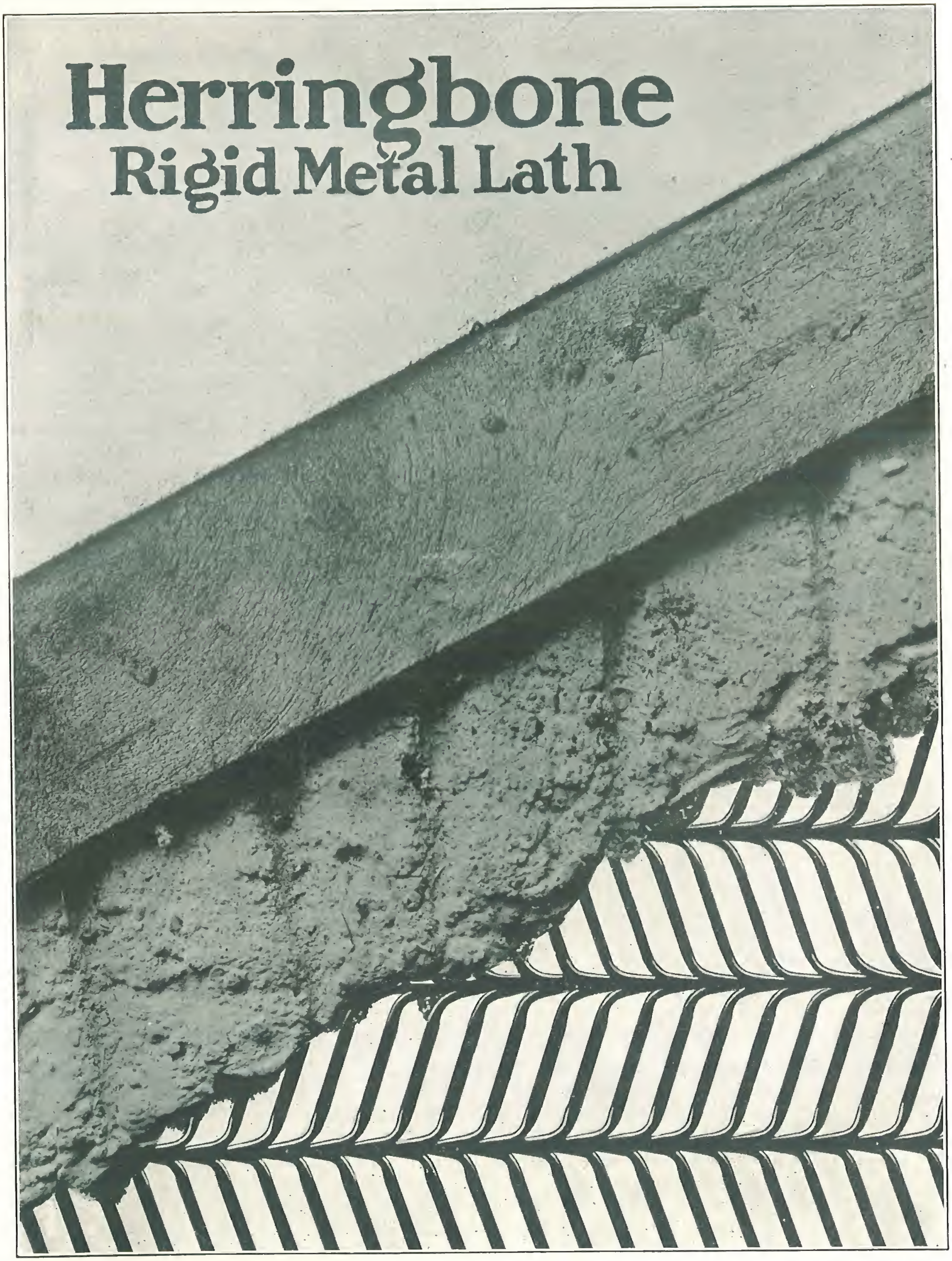
The General Fireproofing Building Products

YOUNGSTOWN, OHIO

BRANCHES:

ATLANTA, MINNEAPOLIS, BOSTON, NEW YORK, CHICAGO, OMAHA, ST. LOUIS, PITTSBURGH, INDIANAPOLIS, MILWAUKEE, CLEVELAND, PHILADELPHIA, SYRACUSE, KANSAS CITY, SAN FRANCISCO, PORTLAND, ORE., LOS ANGELES

Export Department: 90 West Street, New York City—Cable Address: "Firegen-New York"


Herringbone
Rigid Metal Lath

Herringbone Rigid Metal Lath

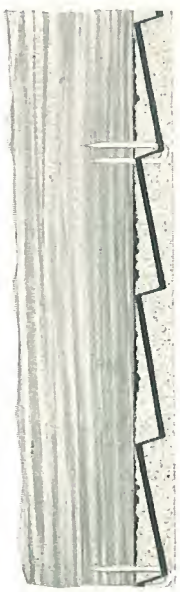
LATH and plaster are so inter-related that the one cannot be properly considered without giving equal consideration to the other. Plaster alone has little strength, and to enable it to perform its true function as a combined finish and fire protection for walls and ceilings, the base which carries it must provide the necessary support and strength to preserve its surface unbroken and to hold it in place under the action of normal settling of the supporting members, severe jar or intense heat.

There are a number of qualities that a lath must possess if it is to be an economical and efficient base for plaster. It must first of all be incombustible and free from shrinking and swelling, it must be easily handled and readily attached to the supporting members of the wall or ceiling, it must take the plaster easily and be economical in its use, it must be durable and always preserve the walls and ceilings unbroken by plaster cracks and safe from fire.

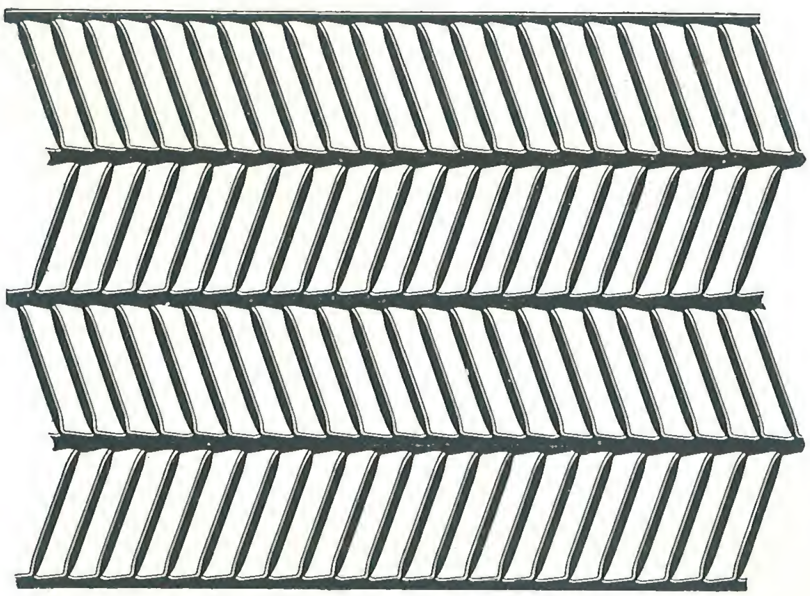
That wood lath, which has so long been used as a plaster base, does not meet all the conditions named is self-evident and recognized by its virtual elimination from all modern office and public buildings where fireproof construction has been specified. Unfortunately for the owner and the occupant, wood lath is still used in a great majority of homes, principally through custom and the error of confusing first cost with true economy.

From the standpoint of fire protection, durability or appearance, ceilings, walls and partitions are governing factors for the interior of a structure.

Fire rises—flames shoot upward against the ceiling. If the ceiling is of plaster on a fireproof base, the flames turn back. Next they test walls and partitions. If these, too, are of enduring, fire-retardant construction, the blaze will be confined to the point of origin.



Cross section showing self-furring properties of Herringbone Metal Lath.

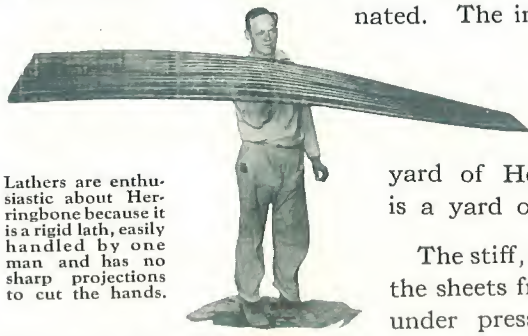


Section of a sheet of Herringbone Metal Lath. Full size sheets are 20¼ inches wide by 96 inches long and contain 1⅔ square yards each. Note the stiffening ribs running lengthwise of the sheet and the flattened, key-forming cross strands.

Of scarcely less importance is the appearance of interiors. Cracks mar the most beautifully decorated wall. Repairing them satisfactorily is impossible. Redecorating them is expensive. Building right from the start is the only satisfactory way.

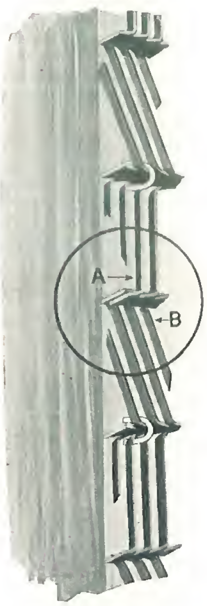
Herringbone Metal Lath—the Perfect Plaster Base

Herringbone Metal Lath has long been used as a standard plaster base and a material for miscellaneous fireproofing. It is applied to various uses throughout the modern fireproof building, not only for walls, partitions, and ceilings but for floors and for the insulating of steel beams, girders and columns.



Lathers are enthusiastic about Herringbone because it is a rigid lath, easily handled by one man and has no sharp projections to cut the hands.

Herringbone is a metal lath with a distinctive mesh. This mesh pattern, which easily distinguishes Herringbone from any other type of plaster base, was adopted not for the purpose of producing a novel design or for convenience in manufacture, but to effect true economy at every stage in the production of a finished plaster wall.



The interlocking edges of adjacent Herringbone sheets facilitate erection and prevent waste in lapping.

Herringbone was first designed and then special machinery constructed to produce it. In fact several additional operations not required by more simple patterns are necessary to make Herringbone.

A study of the Herringbone pattern will demonstrate why this metal lath enjoys the popularity it holds among architects, contractors and plasterers in general.

Application of Herringbone

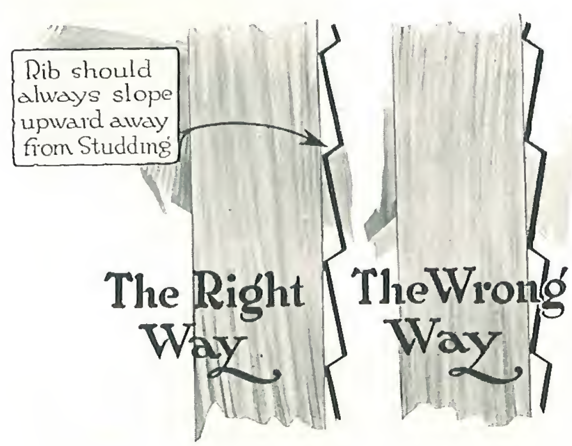
Because of its exceptional rigidity, Herringbone can be handled and applied by one man without a helper. Men are not always available in pairs for work of this kind and because Herringbone is a one-man lath, considerable economy is effected in the time and labor involved in lathing. The rigid nature of Herringbone makes it exceptionally desirable for ceiling work. Herringbone requires no stretching, does not sag between supports and allows wider stud spacing by about 25%.

The interlocking edges of Herringbone sheets are another distinct feature of economy. No side lapping of sheets is required and for the normal spacing of studs tying of adjacent sheets is eliminated. The interlocking edges save an inch or more of lap for every sheet applied and a common adage and one literally true is, "a yard of Herringbone on the wagon is a yard on the wall."

The stiff, interlocking edges prevent the sheets from separating at the lap under pressure of the trowel and plaster cannot, therefore, be pushed between to be wasted.

The ribs of Herringbone, in addition to stiffening the sheet, make it a self-furring lath—keeping the mesh work far enough away from the studding to enable the plaster to thoroughly embed the lath over the supports. This does away with the expense of special furring.

To secure full advantage of the built-in, plaster-saving qualities of Herringbone it is essential that the lather be careful in erecting to see that the faces of the longitudinal reinforcing ribs always slope *upward away from the studding*. This insures the full advantage of the combined "baffle-plate-shelf" action when the plaster is applied. There is a right way and a wrong way to erect Herringbone as illustrated on this page.

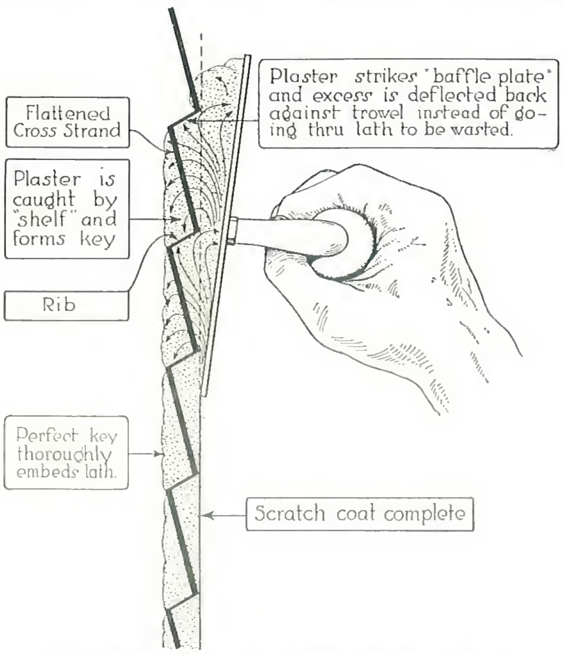


Full possibilities of Herringbone plaster-saving design are secured only when the sheet is properly erected. This shows the right and the wrong way of attaching Herringbone to vertical supports.

Plastering on Herringbone

The peculiar mesh pattern of Herringbone with its longitudinal, sloped, reinforcing ribs and flattened connecting cross strands, in addition to giving great rigidity to the lath also facilitates plastering, saving both time and material.

Just how Herringbone eliminates waste in plastering is clearly shown by the accompanying drawing. Let us consider the action of the plaster as the trowel moves upward over the face of the Herringbone. The reinforcing ribs, set at an angle of 45° to the plane of the sheet, scrape the mortar from the trowel forcing it through the mesh work and curling it around each diagonal cross strand. Note how the mortar as it passes through the lath lodges on the little "shelves" formed by the reinforcing ribs, automatically building up a perfect key behind each cross strand as the trowel moves from one rib to another. These "shelves" catch the mortar, preventing it from falling behind the lath to be wasted.

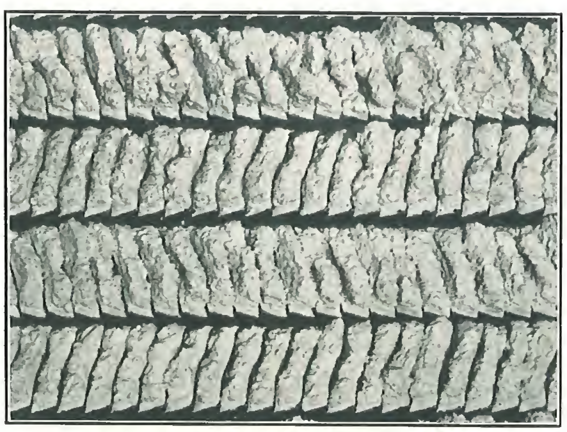


Herringbone is more than a steel mesh-work. The size of the mesh opening, the slope of the reinforcing ribs and the shape of the connecting strands combine to facilitate plastering and to reduce waste of plaster.

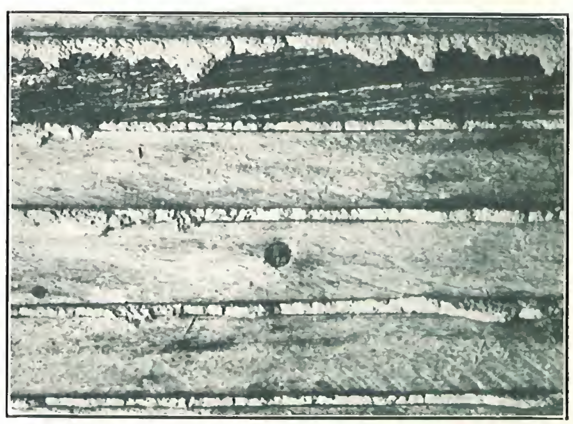
The reinforcing ribs of Herringbone serve still another interesting purpose. As the trowel moves across the lath, the excess mortar between the lower part of the trowel and the Herringbone, instead of being pushed through the lath, is deflected back against the trowel by the sloping face of the reinforcing rib. The trowel picks up this excess mortar and carries it above the rib to form the key for the next series of cross strands. Note that one face of each rib acts as a shelf, supporting the "key," and the other face as a "baffle plate," returning the excess mortar to the trowel. The flattened cross strands of Herringbone also serve to save plaster as they do not cut the mortar, but guide it around and behind the lath where it forms the key.

Another saving of plaster is effected by the exceptional rigidity of Herringbone. Because of this the lath does not sag or "belly" between supports and always presents an unyielding surface to the trowel, with no depressions that require an excess of plaster to bring them up to an even surface.

By the use of Herringbone very little mortar is lost from falling back of the lath and just enough is used to produce the desired finished surface and to protect the lath.



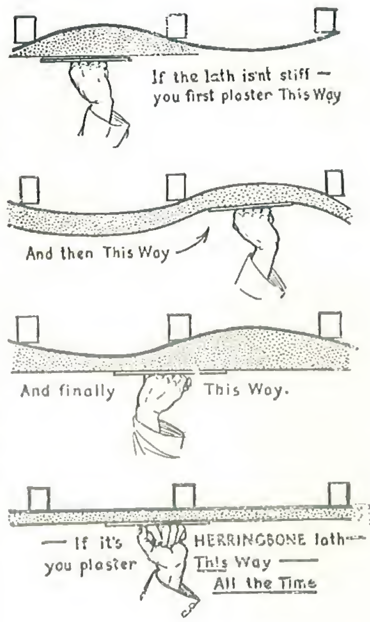
The "key" side of Herringbone after plastering. Note how the plaster and the steel fabric are knit together. Every square inch of plaster is reinforced and backed up by a "key."



The "key" side of wood lath after plastering. Only that part of the surface opposite the openings between the lath is "keyed." Wood lath provides practically no reinforcement for the plaster.

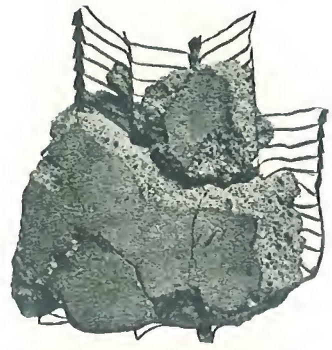
Prevention of Cracked Plaster

Plaster cracks result from a number of different causes. If wood lath is used they may be caused by alternate warping or twisting of the lath due to a varying moisture content. They may result from settling of the wall or building. Again they may result from jar. In nearly every case of this kind Herringbone does more than merely carry the plaster—it reinforces the plaster as well—lath and plaster being formed into one inseparable unit.



Durability of Herringbone

Because of the Herringbone design, the plaster fully envelops the metal, which itself is either painted or galvanized, and no fear need be entertained that rusting of the lath will ever result. Numerous specimens of Herringbone taken from buildings after fifteen or twenty years' service show positively no sign of rusting. For exceptional exposure such as very moist climates or salt sea atmosphere, Herringbone Metal Lath made from sheets of Armco Ingot Iron may be specified.



Herringbone Lath embedded in concrete. This section was taken from the floor of a toilet room in a Michigan automobile plant, and it shows that steel in contact with the concrete during the six years is as good today as when placed.

After sixteen years of service in St. Mark's Hotel, Oakland, Calif., this sheet of Herringbone showed no sign of deterioration. Herringbone is furnished painted, galvanized, or from Armco Ingot Iron.

Summary of Herringbone Economies

Herringbone Rigid Metal Lath saves time and material, preserves the walls and ceilings on which it is used, protects the building from fire and vermin, and what is equally important, the reputation of the architect who specifies it and the contractor who erects it.

By the recent addition of a new style of Herringbone—Herringbone Double-mesh Lath—practical builders have benefited by still another source of economy. This lath has double the number of openings of any previous type of Herringbone and the size of each individual opening is less than that of any other expanded metal lath made.

Because of the smallness of the opening, Herringbone Double-mesh requires less plaster for the scratch coat. For this reason less time is required for the initial coat to set and the plasterer may follow right back with the brown coat while the scaffolding is still in place.

By this combined saving of plaster and labor the economies of Herringbone in general are materially increased wherever Herringbone Double-mesh is used.

The different types of Herringbone Metal Laths together with complete data on weights and sizes of sheets are shown on pages 43 and 44.

The Multnomah Hotel, Portland, Ore.
Herringbone Armco Lath used.

Standard Oil Building, San Francisco, Calif.
Herringbone Armco Lath.
Architect, Geo. W. Kelham.
Contractors, Luidgren Co.

Federal Reserve Bank,
San Francisco, Calif.
Herringbone Armco Lath.

Cosden Building, Tulsa, Okla.

Pennsylvania Terminal, New York City.
Herringbone Metal Lath.
Architects, McKim, Mead & White.

Wardman Park Inn, Washington, D. C. Herringbone Metal Lath used for solid partitions.
Architect, Harry Wardman.

Prominent Buildings in which Herringbone Rigid Metal Lath was used

Herringbone Solid Plaster Partitions

High real estate values of congested business centers make it desirable and usually imperative that every available square foot of floor space be made to produce a profit for the owner.

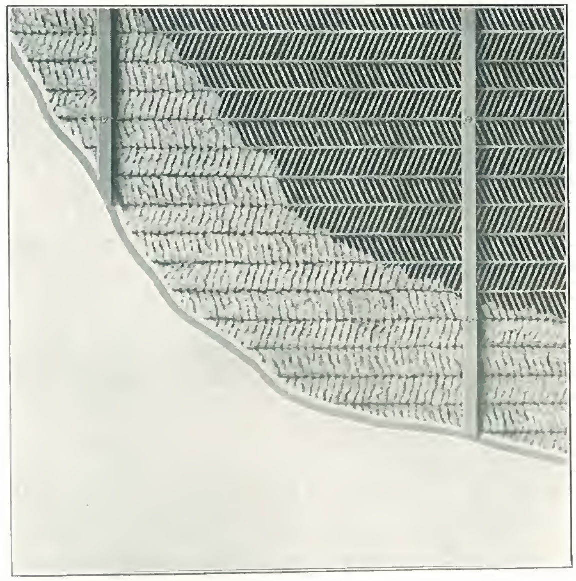
Six, five or even four-inch partitions are very wasteful of space, and when taken in the aggregate, their use often means a direct loss of several thousand dollars a year in rentals to the owners of an office building of any size.

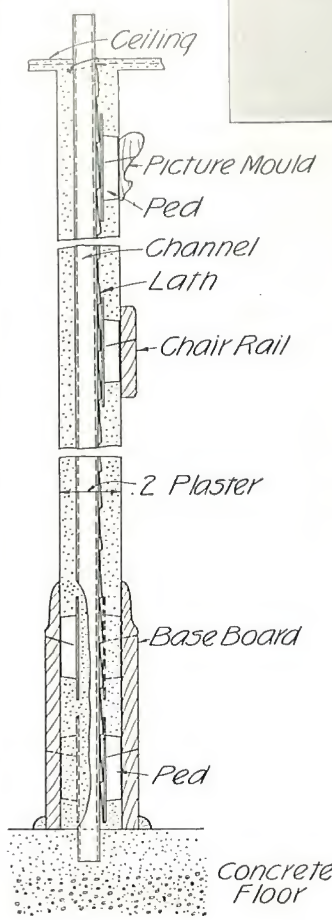
One of the most successful ways of increasing the percentage of rental area in office buildings, hotels and apartments is found in the use of the two-inch solid plaster partition. A partition of this thickness saves from two-thirds to half of the floor area used by hollow partitions of tile and converts it into usable floor space. This saving for the entire building may be easily computed. By using two-inch partitions in place of those of four-inch or six-inch thickness, a strip from one to two inches in width is gained around each room. In a typical 500-room hotel a saving of 3500 sq. ft. is thus effected. This is equivalent to about 10 rooms, with a rental value of at least $50.00 per day.

Solid plaster partitions of this type are readily constructed of Herringbone Metal Lath and GF Steel Channels plastered both sides with either gypsum or cement plaster to a thickness of two inches.

Herringbone Solid Partitions not only conserve floor space and add to the rentals of the property, but they show an additional saving in the construction of the building. Because of the lighter weight of two-inch partitions the dead weight of the super-structure is reduced, resulting in a lighter construction for the steel work of the building.

Solid partitions of Herringbone Metal Lath and plaster are economical in cost and easy to erect. They are monolithic throughout their area and hence are stronger than block partitions of two to three times their thickness.



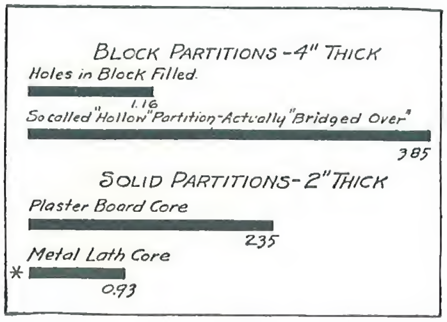


Solid two-inch partitions of GF Steel Channels, Herringbone Metal Lath and plaster are space-saving, sound-proof and fire-resistive.

An objection that was made to this type of partition in the early days of its use was the difficulty of properly installing electrical switch boxes, most switch boxes then made being of such a thickness as to render them unfit for a two-inch partition. This objection has now been overcome, as a number of prominent manufacturers of these devices have adopted special boxes for partitions of this type. They are readily procurable through any electrical supply house. Details of electrical installations in two-inch metal lath partitions are shown on page 10.

Herringbone Solid Partitions—Sound-Proof

The ideal partition for hotels, apartment buildings, school houses and hospitals is the one that, in addition to affording fire protection and surfaces unmarred by plaster cracks, will also prove an effective



Relative intensity of sound transmitted through solid metal lath partitions as compared with hollow block partitions.

barrier to the transmission of sound from one room to another.

A series of acoustical tests made by Professor F. R. Watson of the University of Illinois in November, 1918, established the superiority of solid partitions of metal lath and gypsum plaster as a retardant to the transmission of sound.

Four distinct tests were successfully carried to completion—comparative measurements on the amount of sound passing through partitions of successive thicknesses of plaster covering and of the following constructions:

1. So-called "hollow partition" plastered on both sides with blocks as manufactured.
2. Same blocks with holes filled with the same material of which the blocks were made.
3. Solid plaster partition with plaster board core.
4. Solid plaster partition with metal lath core.

These tests proved conclusively that the two-inch plaster partition with a core of metal lath was the nearest to being soundproof of any of the types tested.

The relative intensities of sound transmitted by each type of partition is shown in the accompanying chart. In summing up his conclusions, Professor Watson says, "The superiority of the metal lath and plaster partition is doubtless due to several qualities. The metal lath core, because of its open mesh, not only allows the construction of a homogeneous plaster medium that is continuous from one face through the metal lath to the opposite face, but it also reinforces the partition. It has, therefore, the desirable quality of inertia with increased rigidity. Experimental measurements in a situation of this kind appear to give the most direct evidence so that the results recorded here may be taken to represent the relative merits of the partitions."

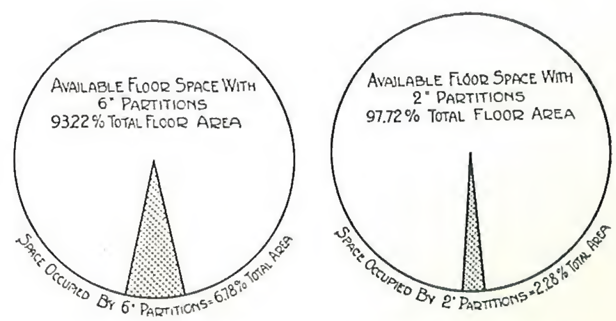
Thus the solid 2-inch partition gives the soundproof qualities of the solid masonry wall with light weight and economy of space, labor and materials.

The great strength of the solid plaster partition and its ability to withstand great shock and abuse was well demonstrated in the Japanese Earthquake of Sept. 1, 1923. Next to the thicker concrete and reinforced concrete partitions affected by the earthquake, metal lath solid partitions withstood the effects of the shock better than any other type of construction. This is brought out in the report of Mr. W. S. Sample of the George A. Fuller Company who investigated the effect on various types of buildings. In his recommendations growing out of this investigation, Mr. Sample says: "If impracticable to use reinforced concrete partitions, the next best in the order named are,

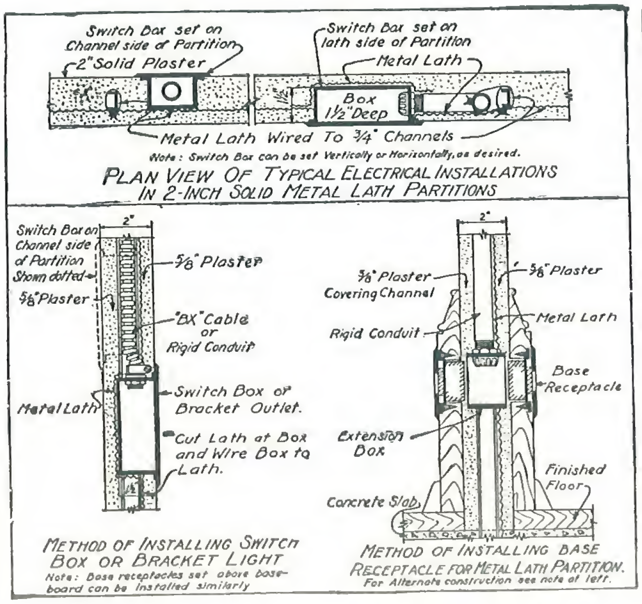
Metal Lath on Steel Studs
Solid Brick
Hollow Brick
Hollow Clay Tile

Reinforced concrete is, of course, recommended because of the additional stiffness thereby awarded to the structure as a whole, but if this seems to be impracticable then use Metal Lath."

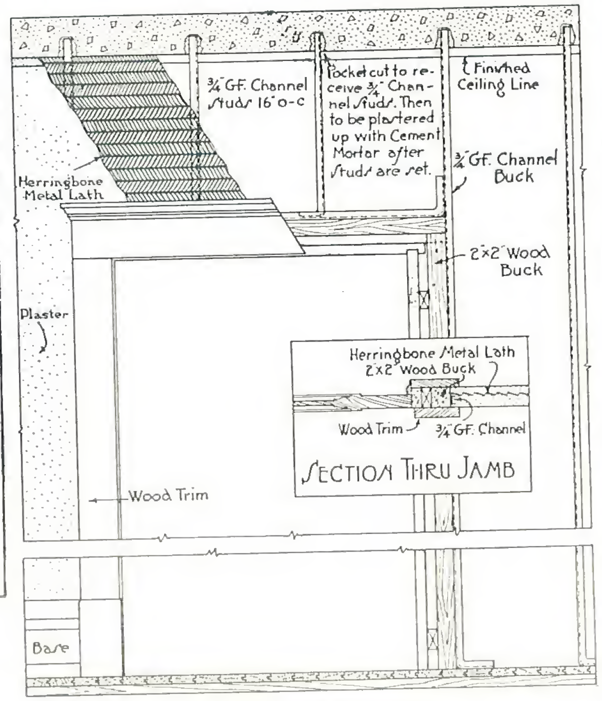
This report is a real recommendation for Metal Lath partitions and indicates that, next to reinforced concrete which is seldom used, metal lath partitions are the strongest it is possible to construct.



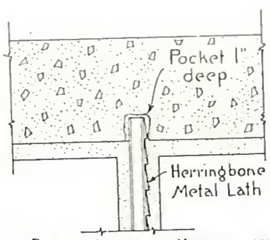
Diagrams showing comparison of available floor space in two buildings, one with 6-inch partitions, the other 2-inch partitions; total floor area, 33,000 square feet.



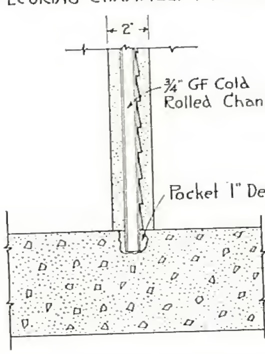
Typical electrical installations in 2-inch solid Herringbone partitions, showing use of special shallow switch boxes and other devices.



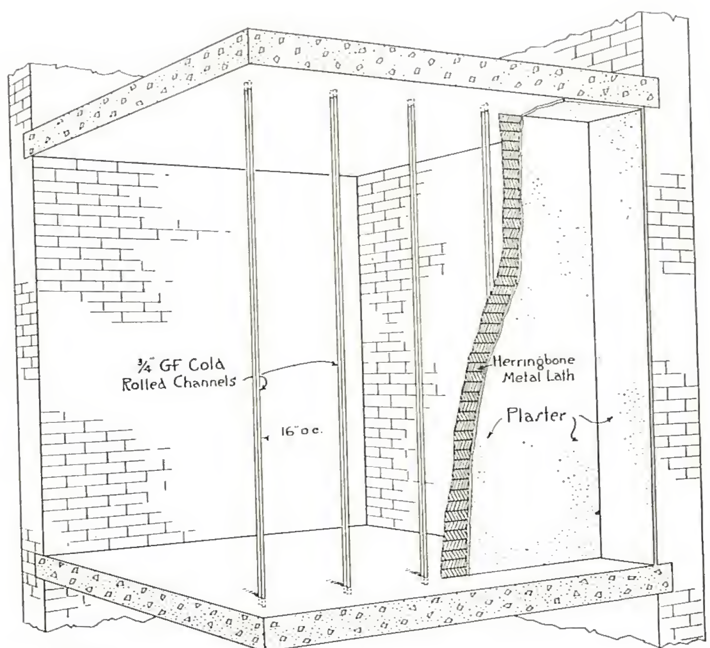
2" SOLID PARTITION
HERRINGBONE METAL LATH ON ¾" GF CHANNELS



DETAIL SHOWING METHOD OF SECURING CHANNELS AT CEILING



DETAIL SHOWING METHOD OF SECURING CHANNELS AT FLOOR



2 INCH SOLID PLASTER PARTITION USING GF COLD ROLLED CHANNELS & HERRINGBONE METAL LATH

The General Fireproofing Building Products Youngstown, Ohio	**Two-inch Solid Partition Details Using Herringbone Metal Lath and GF Steel Channels**	*The General Fireproofing Building Products Youngstown, Ohio*

SPECIFICATIONS

Solid Partitions

Two-inch Solid Herringbone Metal Lath and Plaster Partitions shall be constructed as follows:

Studding shall be rigidly anchored to floor and ceiling.

(1) Where floors are solid concrete, small holes shall be drilled in the floor and ceiling and the channels sprung into place. (See cut on page 10.)

(2) Wood blocks may be placed in the concrete while pouring or wood dowels are set into the concrete after it has been poured. Channels to have a 3-inch right angle bend on each end and to be nailed securely to the blocks.

(3) If ceiling is of metal construction, method 1 or 2 shall be followed for the floor, while the top end of the channels is left straight and pushed up through the metal lath and wired securely to it.

(4) Where wood floor construction is used, channels are bent with a 3-inch right angle shoe, top and bottom, and nailed securely in place.

Studding to be ¾-inch GF Cold Rolled Channels where height does not exceed 10 feet, or 1 inch GF Cold Rolled Channels where height is greater than 10 feet.

Herringbone Metal Lath (a) painted, (b) "Armco" Iron, to be securely tied to one side of studding with 18 gauge Galvanized Tie Wire. Channels to be spaced as follows:

For 2.2 lb. Herringbone Lath	12" c-c
2.5 b. Herringbone Lath	16" c-c
3.0 lb. Diamond Rib Lath	24" c-c
3.5 lb. Diamond Rib Lath	30" c-c
4.0 lb. Diamond Rib Lath	36" c-c

Soundproofing—(a) Metal Lath shall be plastered down close to the concrete floor line or (b) where wood floor finish is used, the plaster shall run down to the sub-floor.

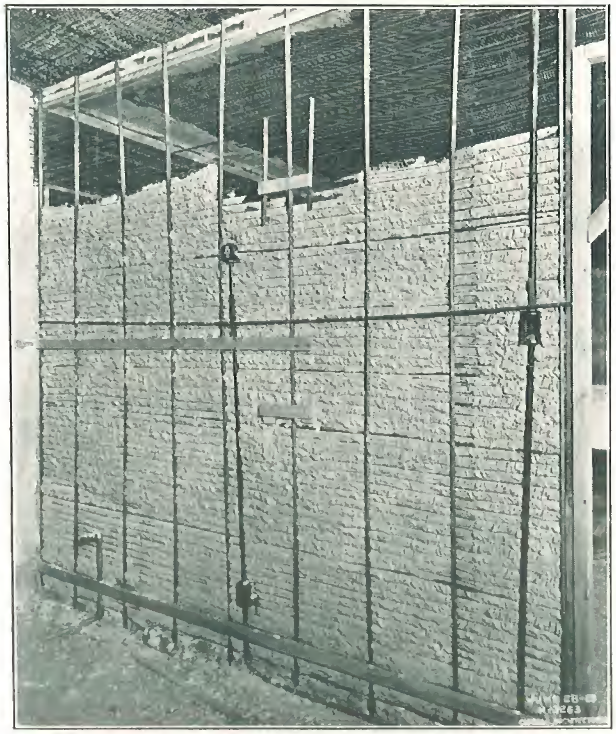
Solid partitions on Herringbone Metal Lath are economical in first cost, space saving, sanitary and fire-resistive. The solid wall affords no refuge for vermin and effects a saving in floor area of from two to three inches in each partition, over that required by other types of partitions giving equal results. Solid partitions on Metal Lath are more sound-resistive than any other partition in general use. A complete report of recent tests will be sent on application. (See details, page 10.)

Double Partitions

Where desired, double partitions may be formed with Herringbone or Diamond Rib Lath and GF Cold Rolled Channels, using 1½-inch or 2-inch perforated Channels, to which the Metal Lath is attached on either side. These channels are perforated to receive the wires for the attaching of the Lath and in this type of partition the lath is plastered on the outer sides only, leaving an intervening space, the width of the channel, in which may be placed ducts or pipes. Spacing of channels depends upon the weight and style of lath used and is the same as given under "Solid Partitions."

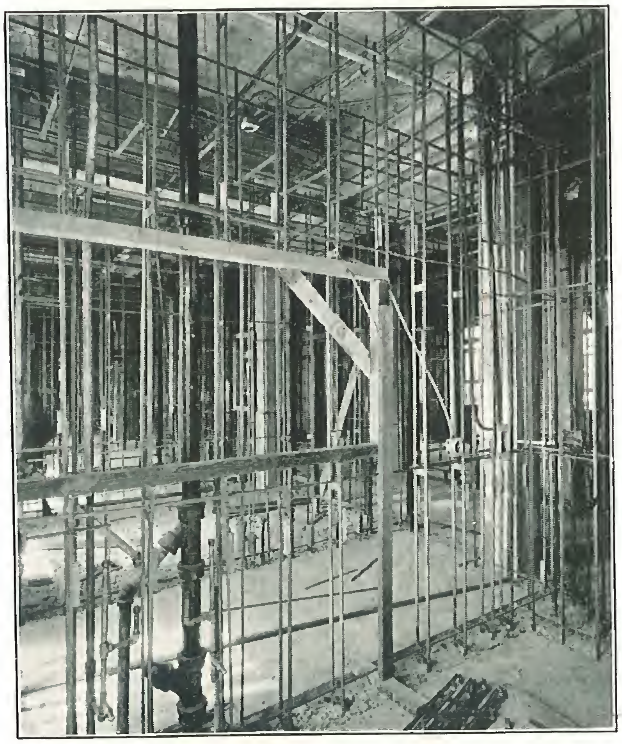
Both the solid and hollow Herringbone partitions, as previously described, are extensively used in fireproof buildings for non-bearing partition walls, in offices, schools, apartments, hotels, hospitals and other fireproof structures, for the forming of room divisions, also in corridors and for enclosures of different kinds. They are light in weight and require no strengthening of the floor for their support. They may be located where desired without regard to the location of the supporting floor beams. In large buildings, divided into many units, a saving in the weight of partition walls alone affords a decided saving in the cost of the structural members, and always gives a larger available working floor area.

Either solid or hollow partitions may be used for any ordinary height of partition walls. For extreme heights, it is desirable to place the channels slightly closer together or to use a larger size, but in all cases, the finished partition is absolutely shock-proof and fire-resistive and is economical in cost and space.

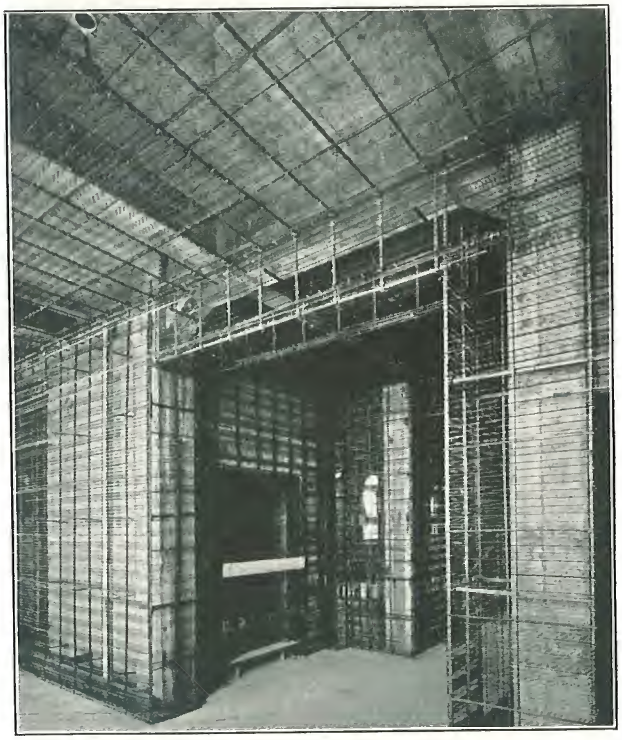


Two-inch solid partition in process of construction. Sheridan Surf Apartments, Chicago, Ill. Grossman & Proskauer, Architects. Thomas Kelly, Plastering Contractor. D. M. O'Neil, Lathing Contractor.

Double partitions and ceilings using Herringbone and GF Steel Channels. Highland Hospital, Oakland, Calif. Henry Meyers, Architect. Geo. Hudson, Contractor.



GF Steel Channels in place ready for Herringbone Metal Lath. Highland Hospital, Oakland, Calif.



Elevator enclosure, Highland Hospital, Oakland, Calif. Double partitions and ceilings of Herringbone Metal Lath and GF Steel Channels.

Herringbone Ceilings

The use of metal lath for ceilings was one of its first applications, having been early recognized as a means for preventing the plaster cracks caused by the direct weight of the plaster and the tendency of the floor above to deflect under load bringing stresses on the plaster of the ceiling.

The great popularity of ornamental ceilings in hotels, theatres, churches and other monumental buildings and the necessity for the preservation of this expensive work have made the use of metal lath for this purpose imperative.

Herringbone because of its strength and positive key-forming mesh is a great favorite among architects for ceilings of this kind, as they fully realize that to use it is a certain means of preserving the beauty of their handiwork and the good will of their clients.

The economies of Herringbone are nowhere more noticeable than in ceiling work. The characteristic rigidity of Herringbone and its interlocking straight edges facilitate erection and allow wider spacing of supports wherever this is permissible. Waste in side lapping is cut to the minimum because of the true working edge which is characteristic of every Herringbone sheet. The selvage edges of Herringbone sheets likewise cut down the amount of tying between supports that is a necessity in the case of less rigid laths.

The plaster so often wasted in smoothing up a surface where the lath deflects under the pressure of the trowel is saved where Herringbone is used.

In suspended ceiling work where a considerable investment in furring channels is necessary, a very appreciable saving is possible by the use of Herringbone Rigid Metal Lath. As in the case of attached ceilings, this saving is made possible by the wider spacing of the channels.

In all ceiling work best results are obtained by working the trowel parallel to the stiffening ribs of Herringbone as the "baffle plate" action of the rib, which saves plaster in the case of wall plastering, sometimes prevents sufficient plaster to key behind the lath if plastered across the ribs on ceiling work. For this reason it is always advisable to plaster lengthwise of the sheet on ceiling work and cross-wise on walls and partitions. No furring channels are required where ceilings are to be attached to steel or concrete beams. Steel furring channels are attached to the beams and the lath applied directly to the channels. Here is where Herringbone effects true economy as its exceptional stiffness makes 25% wider spacing possible and consequent saving in channels and the cost of erection.

SPECIFICATIONS FOR HERRINGBONE CEILINGS

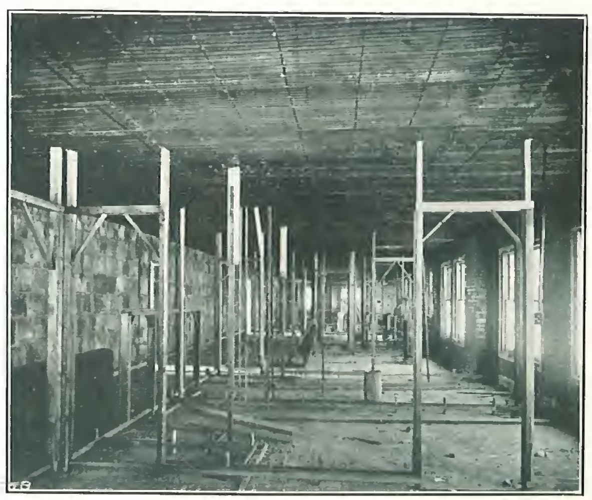
Ceilings Under Steel Beams

Where beams are spaced four feet or less apart, ¾ inch GF Cold Rolled Steel Channels may be used as furring at right angles to beams and fastened to the bottom flanges by clamps or special clips where beams are not fireproofed or to hangers of not less than No. 9 galvanized wire spaced not to exceed 2 ft. centers along the channels.

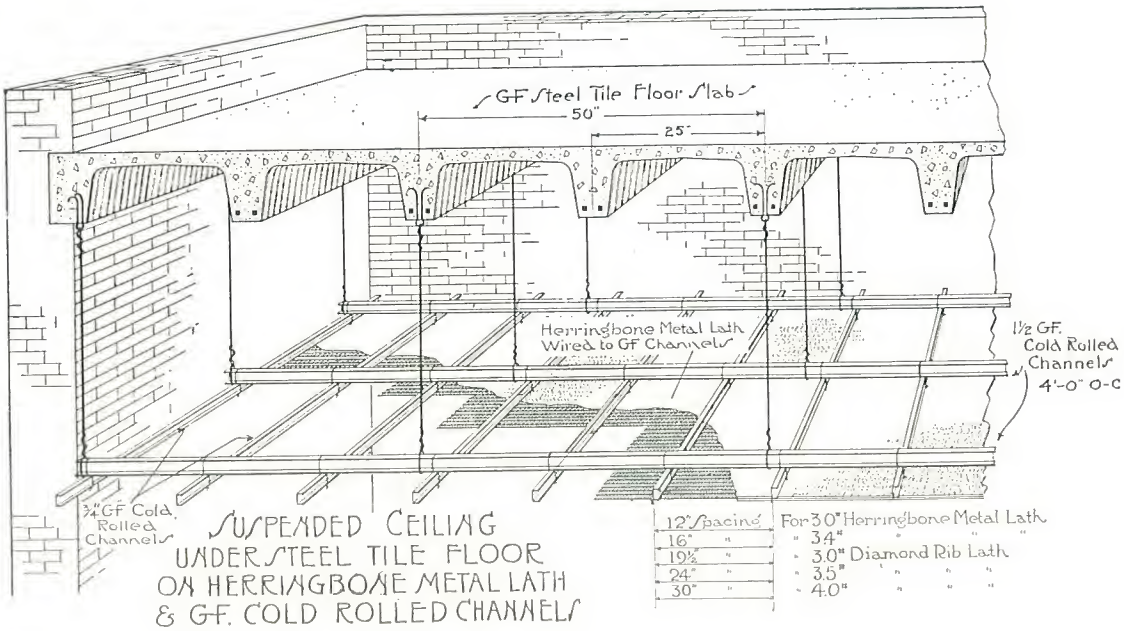
Channels to be spaced as follows:

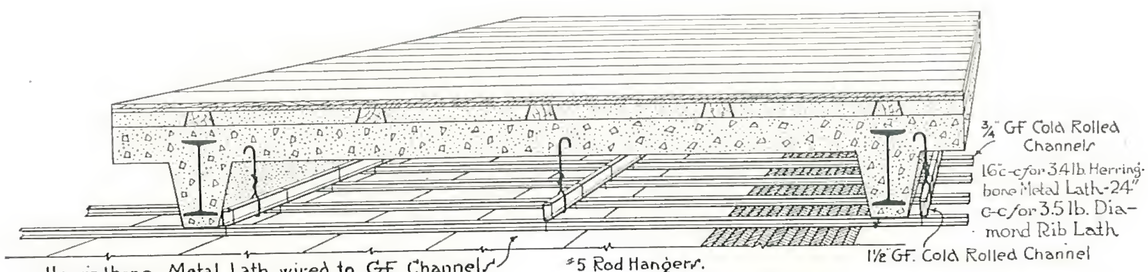
For 3.0 lb. Herringbone Lath	12	" c-c
3.4 lb. Herringbone Lath	16	" c-c
3.0 lb. Diamond Rib Lath	19½	" c-c
3.5 lb. Diamond Rib Lath	24	" c-c
4.0 lb. Diamond Rib Lath	30	" c-c

Where beams are spaced over four feet apart, use a 1½ inch GF Channel intermediate hanger suspended from floor slabs midway between beams. If beams are fireproofed, an extra 1½



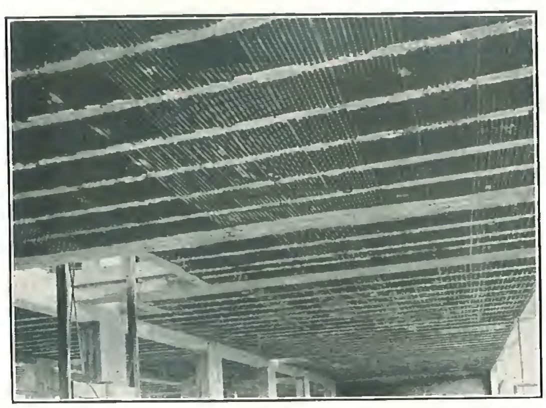
Herringbone Metal Lath for ceilings, Roosevelt Apartments, Chicago, Ill. Eric Hall, Architect, Chicago.





FURRED CEILING ON HERRINGBONE METAL LATH & GF. COLD ROLLED CHANNELS

Herringbone Suspended Ceiling under steel tile floor.



Herringbone Ceiling attached to steel tile floor.

The General Fireproofing Building Products Youngstown, Ohio	Details of Ceiling Construction Using Herringbone Metal Lath and GF Steel Channels	*The General Fireproofing Building Products Youngstown, Ohio*

inch GF Cold Rolled Channel should be used as shown on page 14.

Ceilings Under Concrete Beams

Where concrete beams are spaced four feet or less, ¾ inch GF Cold Rolled Steel Channels may be used as furring at right angles to beams and securely fastened thereto by 14 gauge Galvanized Tie Wire inserted in the beams before the concrete is poured.

Where the beams are spaced over four feet apart, use intermediate hangers supporting 1½ inch GF Cold Rolled Channels running parallel to beams which in turn support ¾ inch GF Channels. ¾ inch Channels and Herringbone Lath are to be used as specified under Steel Beams.

Ceilings Under Steel Tile

Method No. 1—After wood forms are erected, place 3.4 pound Herringbone Metal Lath over forms and at right angles to the concrete joists. GF Steel Tile and reinforcing bars are then placed and secured in position.

Wire stays of No. 18 gauge wire shall be placed through the lath at approximately 8" centers and shall be looped lightly around reinforcement to prevent displacement during pouring of concrete and to securely support finished ceiling.

Method No. 2—Where separate furred ceilings are desired, to be attached directly to joists or suspended at a distance not exceeding 6" below the joists, hangers of not less than No. 9 gauge galvanized annealed wire shall be placed in the slab before pouring concrete. A loop or other deformation shall be provided in each hanger to positively engage the concrete.

Hangers shall be spaced not to exceed 3 feet in direction parallel to the joists and not further apart in the transverse direction than the center to center distance of the joists, which shall in no case be more than 26 inches.

¾" GF Cold Rolled Channels, weighing not less than 276 pounds per thousand lineal feet shall be attached to the hangers parallel to the joists. Such channels shall be spaced not to exceed the center to center distance of the concrete joists and in no case to exceed 26 inches.

Pencil Rods not less than ¼" in diameter shall be attached transversely to the furring channels by not less than three loops of No. 18 gauge galvanized annealed wire.

Pencil rods shall be spaced as follows:

For 3.0 lb. Herringbone Lath	12 " c-c
3.4 lb. Herringbone Lath	16 " c-c
3.0 lb. Diamond Rib Lath	19½" c-c

Where Diamond Rib Lath, weighing not less than 3 pounds per square yard is used, the Pencil Rods may be omitted and ribs of lath attached directly to concrete joists.

In lieu of attachment to channels, Pencil Rods, not less than ¼" in diameter, may be attached directly to wire hangers cast into the concrete joists. Pencil Rods shall be placed at right angles to the joists.

Hangers shall be not less than No. 14 gauge Galvanized Annealed Wire and shall be spaced not to exceed the following:

For 3.0 lb. Herringbone Lath	12 " c-c
3.4 lb. Herringbone Lath	16 " c-c
3.0 lb. Diamond Rib Lath	19½" c-c

Where 3 pound Diamond Rib Lath is used, Pencil Rods may be omitted and ribs of lath attached directly to concrete joists.

Suspended Ceilings

Suspended Ceilings may be hung from any type of floor or roof construction or from supporting beams.

The type of construction is governed largely by the erection of materials and the floor construction used.

In concrete floors No. 5 rods (Approximately 1-5 in. in diameter) are embedded in the concrete slab and spaced four feet on centers each way.

1½ inch GF Cold Rolled Channels 4 feet on centers are securely fastened to the hangers after which ¾ inch GF Cold Rolled Channels are placed at right angles thereto and wired securely in place.

The spacing of ¾ inch Channels is governed by the weight of lath used for the ceiling and shall be as follows:

For 3.0 lb. Herringbone Lath	12 " c-c
3.4 lb. Herringbone Lath	16 " c-c
3.0 lb. Diamond Rib Lath	19½" c-c
3.5 lb. Diamond Rib Lath	24 " c-c
4.0 lb. Diamond Rib Lath	30 " c-c

Herringbone Over Brick and Tile Walls

Wherever plaster is to be applied to interior surfaces of brick or tile walls best results are obtained, not by plastering directly on the brick or tile surface, but by furring out from the face of the wall using Herringbone as the plaster base. This provides an air space between the plaster and the exterior wall of the building adding to its heat insulating properties and preventing condensation on the plastered walls and their discoloration and disintegration through the action of moisture.

For this purpose GF Cold Rolled Steel Channels or Crimped Furring are attached to the wall and Herringbone Metal Lath wired to them.

SPECIFICATIONS

For Attaching Herringbone Metal Lath to Brick, Tile or Masonry Walls

Interior Surfaces

The inside of all exterior brick, tile or masonry walls shall be furred with ¾ inch GF Cold Rolled Channels or ¾ inch GF Crimped Metal Furring spaced according to the weight of lath used.

All furring shall be run vertically and must be securely attached to the wall.

Herringbone Metal Lath (a) painted (b) Armco Ingot Iron weighing not less than 2.5 pounds per square yard, must be securely fastened to furring on 16 inch centers by No. 18 gauge Galvanized Tie Wire. If heavier lath is used furring may be spaced 19 inches or 24 inches on centers.

Exterior Surfaces

When it is desired to fur exterior brick, tile or masonry walls, furring shall be ¾ inch GF Cold Rolled Channels or ¾ inch GF Crimped Metal Furring spaced according to weight of lath used, all furring to be placed vertically and to be attached securely by staples to wood grounds driven tightly into the wall.

Herringbone Metal Lath (a) painted, (b) Armco Ingot Iron or (c) Galvanized, weighing not less than 3.4 pounds per square yard, shall be securely tied to furring on 16 inch centers with No. 18 gauge Galvanized tie wire. With heavier Herringbone Lath, furring strips may be spaced 19 inches or 24 inches on centers.

Note—The Self-Furring qualities of Herringbone make furring strips unnecessary over the face of studs, exterior or interior, or over sheathing boards.

Miscellaneous Uses for Herringbone and Key Metal Lath

Bathroom Floors and Walls

Tile floors and walls in bathrooms should have a solid concrete base to insure permanence and durability. In old or new structures Herringbone Metal Lath may be placed on top of the supporting wood joist and covered with approximately 2 inches of concrete on top of which the tile are laid.

Cement plaster on Herringbone Metal Lath insures a permanent, sanitary and crack-free base for the floors and walls.

Tile Wall Reinforcement

Key Expanded Metal Lath is being used extensively as a reinforcement and mortar saver in Terra Cotta tile walls.

Strips of Key Lath of the desired width are cut on the job and placed over the ends of tile. Mortar is then applied without waste and masons who have used Key Expanded Metal Lath for this purpose have stated the saving in Mortar alone justified the expenditure. A strong, well bonded wall is quickly erected by this economical process.

There are many other parts of interior construction in which Herringbone Metal Lath and plaster should be used—such as elevator shafts, light and air shafts, hot air ducts and ventilating ducts.

For any of the general classes of work listed, Herringbone Lath will insure complete satisfaction because of its extraordinary strength. It gives the necessary carrying capacity for the heavy coating of mortar required in these instances. Information applying particularly to your work, sketches and specifications, will be furnished if you will send us your details.

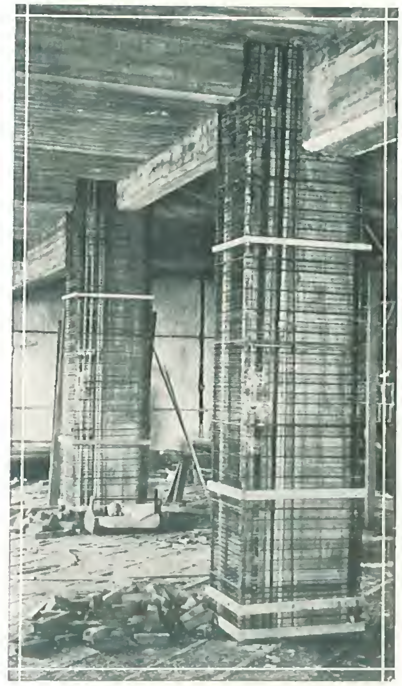
Fireproofing Beams and Columns

While steel structural members will not be consumed, they are greatly weakened when exposed to heat in excess of 700 degrees with disastrous results to the entire structure.

It is readily apparent that those members which carry the floors should by all means be fireproofed. If these are weakened or destroyed there can be but little hope for the rest of the building, or its contents.

The superiority of metal lath as a reinforcement for the protective covering for structural members was demonstrated again and again in the San Francisco and Baltimore fires. The rapid collapse of many so-called fireproof buildings clearly showed the lack of durable column protection. Many of them although built of incombustible materials, suffered most severely where the heat had gained direct access to the steel supporting members. In contrast to this, wherever metal lath and concrete were used, the protection remained intact affording full protection to the steel.

Where a single thickness of Herringbone or Key Metal Lath and plaster is used, and is supported on steel furring, ample protection is given for the normal exposure typical of fires in office buildings, hotels and similar structures. The use of a double layer of metal lath and plaster is recommended for the more severe exposures.

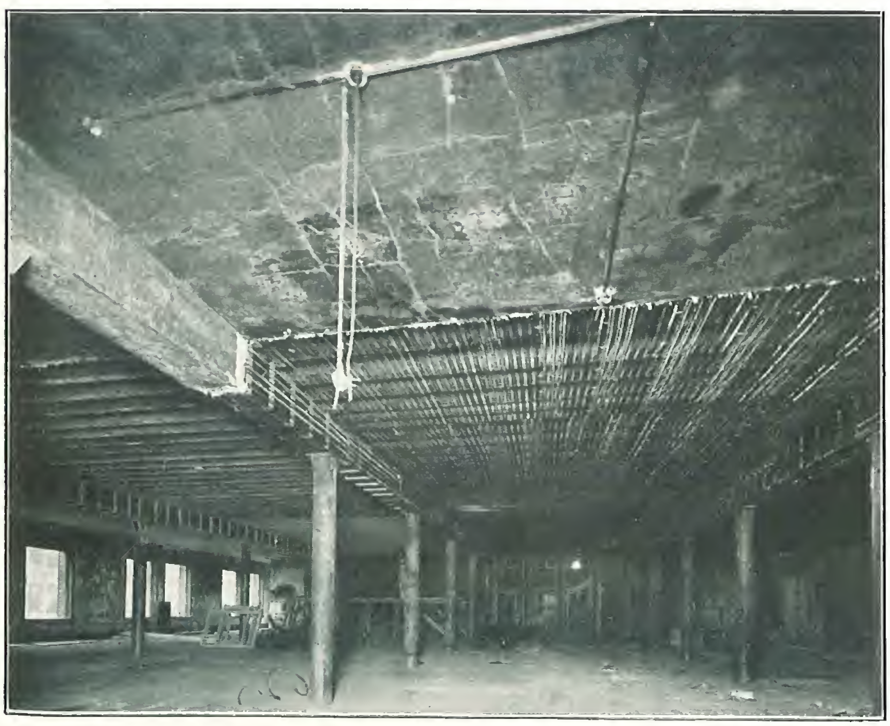


Columns protected by Herringbone Lath and Plaster, Merchants & Manufacturers Bank Building, Milwaukee, Wis.

Second only in importance to the columns, from a fireproofing standpoint, are the beams and girders, and much of what has been said concerning the necessity of protecting columns is equally true of beams.

The methods for fireproofing beams and girders are similar to those employed for the vertical members. Both single and double layers of metal lath and cement are used. GF Steel Channels are used extensively for furring in the fireproofing of beams and columns.

Different methods of employing Metal Lath for the protection of steel columns are shown in detail sketches on page 19.



Herringbone Metal Lath on the ceilings and beams of this building at Second and Mission streets, San Francisco, prevented its total destruction by fire. Fire swept through the third floor of the building but the protected ceiling and beams prevented its spread.

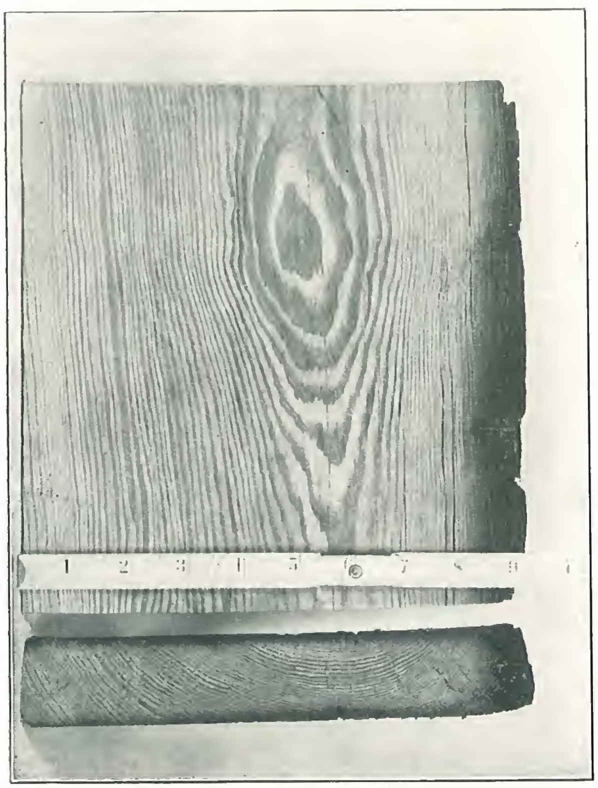
type of wall decoration can be used without fear of having the effect you desire disfigured by streaked or cracked plaster.

Herringbone Fire-Safe Homes

So long as there is an ample supply and so long as lumber continues to be an economical building material, the majority of new dwellings in this country whether of stucco, brick or wood siding exteriors will undoubtedly be of wood frame construction.

By the use of Herringbone as a base for the interior plastering the wood frame house can be given a high measure of fire protection without adding greatly to its cost. Thus by protecting the wood structural members with Herringbone and plaster, economy and fire-safety go hand in hand.

Fire records show that 96% of all residential fires have their inception within the house. There is no city of any size that does not have its daily quota of residential fires. Firemen know that the first fifteen minutes of a fire are the most critical. That is the time required for the department to get under way, make the run and get a stream of water on the burning building. During the early stages of the fire, the construction of the house has everything to do with the outcome. If the house is built of fire-retarding materials, the work of the firemen is easy, the fire remains in its incipient stage confined to the room of its origin, and can usually be put out with the hand extinguisher with minimum damage to the room and furnishings. If, on the other hand, the interior walls are of combustible material, the flames spread quickly from room to room and the work of the department is tremendously increased. In such cases it is necessary to use the fire hose, and even though the flames be extinguished and the damage wrought by them slight, it will be greatly increased by that due to the water.



Floor and ceiling construction after 75-min. exposure to Underwriters' fire endurance test. Section of joists showing maximum charring at lower edge of joist. Original dimensions $1\frac{9}{16}$ by $9\frac{1}{4}$ in. (dressed, nominally 2 by 10 in.

In common plaster we have a material that is ideal for giving fire protection to wood frame construction, but it is rendered impotent unless backed up by a plaster base that is incombustible and free from warping and twisting under the action of intense heat.

Underwriters' One-Hour Rating

That metal lath on wood studding as a base for plaster does prevent the rapid spread of flames throughout the house in which this construction is used, has been ably demonstrated by the Underwriters' Laboratories—an institution fostered by the National Board of Fire Underwriters. After a series of exhaustive tests, the Underwriters' Laboratories have fully approved this form of construction as a fire prevention measure.

Briefly, the result of the Underwriters' tests was to give a one-hour rating to wood joist floors and wood stud partitions when provided with adequate fire stops and protected by metal lath and gypsum plaster.

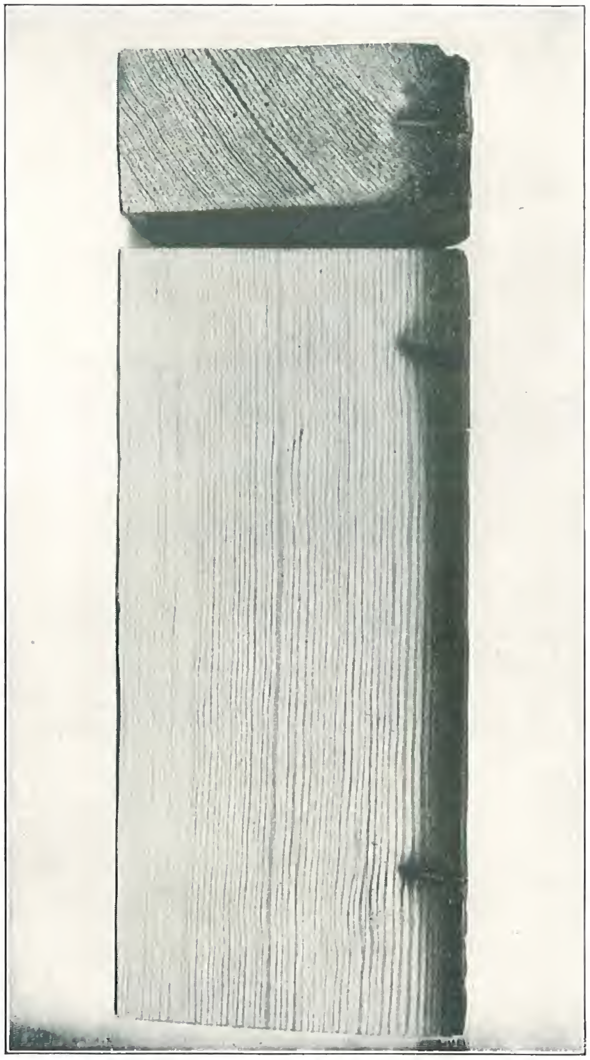
In other words, the owner of a home or apartment buildings with floors and walls protected by metal lath in the manner prescribed for standard construction, may now reasonably expect that fire starting among the furnishings of one room will not break through the partition or ceiling and spread to other parts of the structure for a period of one hour. This is a period sufficiently long to extinguish the most obstinate residential fire.

A one-hour barrier to flames, such as is offered by metal lath-protected walls and ceilings will hold the majority of fires in check until the most tardy fire department arrives on the scene.

The tests performed on this type of construction by the Underwriters' Laboratories resulted in the highest time rating ever given a partition where wood studding was used for the structural members. Summing up the results of the series of tests on partitions, ceilings and floors the Underwriters' Laboratories make the following conclusions:

Fire-Retarding Properties of Bearing Partition or Wall

"Metal lath with ¾" three-coat gypsum plaster coatings when installed on each side of studs comprising the framework of bearing partitions or walls and when exposed on one side only to standard fire test conditions, will prevent the passage of fire through the partition or wall for the entire period during which studding of the dimensions ordinarily employed (2 by 4 in. or 2 by 6 in.) will support its load. The construction, when employed as a bearing partition or wall, will function, while loaded, as a barrier to the passage of flame and the spread of fire for at least one hour, when subjected on one side to impact and erosion by standard fire hose streams applied any time up to one hour from the beginning of the fire exposure period. The fact that the combustible frame of the partitions or wall will be ignited in about 45 minutes of fire exposure should have consideration, but does not detract from the performance of the construction as a whole as a fire retardant up to the limiting period."



View showing maximum charring in 2 by 4-in. studs protected by metal lath and gypsum plaster, after exposure to Underwriters' fire conditions for 75 minutes.

Fire-Retarding Properties of Wood Joist Floor and Ceiling Construction

(When complete fire-stopping within hollow spaces is provided.)

"A wood joist floor construction utilizing a metal lath and gypsum plaster ceiling finish, when exposed on the ceiling side to standard fire test conditions, will for at least one hour safely sustain its rated load and suffer no serious reduction of strength or of cross-section area of combustible load-bearing units and will prevent the passage of fire through the assembly for at least one hour unless previously subjected on the ceiling side to the impact and the eroding effect of standard hose streams. Upon application of hose streams after 30 minutes' standard fire test exposure the gypsum plaster finish will be destroyed. The fact that the combustible units of the construction will be burning within the one-hour period (about 45 minutes) should have consideration, but does not detract from the performance of the assembly as a fire retardant up to the limiting period."

With the high rating given metal-lath-protected partitions and ceilings the way seems open to a marked reduction in the tremendous loss of life and property yearly sacrificed to fire as a result of flimsily constructed residences. The Metal-Lath-protected frame dwelling house or apartment building seems to be the answer to the problem of providing fire-safety without adding greatly

to the cost or making the owner pay a too high premium for his protection.

Dana Pierce, Vice President of the Underwriters' Laboratories, Inc., with headquarters in the New York office, discussing the announcement of the Laboratories' findings said: "This discovery of the fire-resistive properties in an ordinary priced partition marks an epoch in the science of construction. It is a new contribution to the art of building that has wider possibilities than we may foresee today. This material has a higher 'time rating' than we or any one familiar with building materials had expected. The whole experiment has proved that there is an unexpectedly good resistance to fire in a type of partition which has not been generally considered fireproof, and now is recognized as more nearly equivalent to strictly fireproof construction than any other building material."

Herringbone Rigid Metal Lath has the combined properties of extreme rigidity and a distinctive mesh that are reflected in lower plastering costs, as well as added efficiency as a fire retardant.

With the tests of the Underwriters' Laboratories on metal-lath-protected partitions and floors resulting so favorably for this type of construction, there is now really little reason why the prospective builder should not avail himself of the economies of wood frame construction, knowing that it can be given protection against fire equal to more expensive types.

Conclusive evidence of the efficacy of metal-lath-protected plaster is shown in the photographs on pages 20 and 21. A close-up view of the studs used in this test proves that fire of a severity seldom, if ever, encountered in the majority of conflagrations, will be unable to reach a vulnerable point for a period of time sufficient to permit its being extinguished.

Protecting the Vulnerable Points

For maximum safety to life and property, good judgment commends the use of Herringbone Metal Lath as a plaster base in all parts of the house.

If the funds available for the construction of the home do not permit the use of metal lath throughout, a high degree of fire protection can be built into the house by using Herringbone Metal Lath in those places where experience has shown a majority of fires start or where their spread is facilitated. Thus a large percentage of the fire hazard will be eliminated.

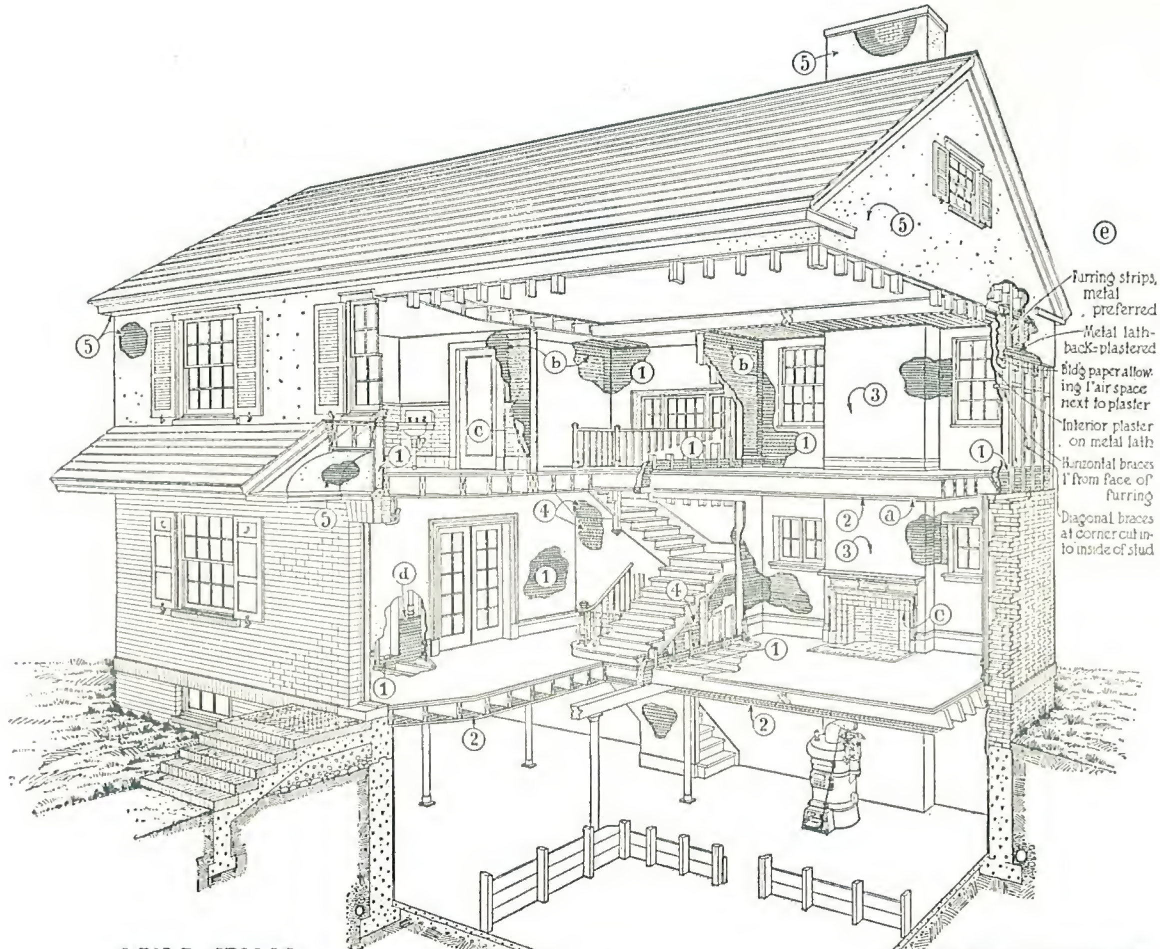
Residence of G. E. Rose, Youngstown, Ohio. (See page 24.)

The sketch on page 23 shows where Herringbone should be applied to the walls and ceilings of any house in which it is not possible to use it throughout. By the use of Herringbone Lath in the places shown, a large measure of protection from both fire and plaster cracks is afforded.

All interior partitions that support floors, and all exterior walls where studding is used should be protected with Herringbone Metal Lath. The walls and partitions form the framework of the house and if weakened by the attack of the flames the loads they support may easily cause the collapse of the entire structure.

Unless properly protected with metal lath, walls and partitions supported by wood studding act as open flues for the free passage of flame from floor to floor. Baskets of metal lath built at the juncture of all floor joists and vertical walls, and filled with non-combustible materials form an effective fire stop at such vital points.

Many fires have their origin as a result of defective chimneys. Chimneys are rarely suspected of being defective until after the damage has been done. For this reason it is only prudent to encase the chimney breast with Herringbone



"FIRE STOPS"

1. All bearing partitions and studs in exterior walls including a basket to hold incombustible material as a fire stop
2. Ceilings under inhabited floors, especially over heating plants and coal bins.
3. At chimney breasts, around flues and back of kitchen ranges.
4. Stair-wells and under stairs.
5. As a base and reinforcement for exterior stucco.

"CRACK PREVENTION"

(a) On Ceilings of prominent rooms.

(b) Lap 6" on either side of wall and partition angles, and around door bucks.

(c) Back of wainscots and tile mantels.

(d) Across plumbing-pipes and heat-ducts.

(e) Showing proper construction of exterior stud walls for successful stucco.

The General Fireproofing Building Products Youngstown, Ohio

Critical Points of Construction

Showing use of Herringbone Metal Lath for the protection of places most susceptible to fire and plaster cracks

The General Fireproofing Building Products Youngstown, Ohio

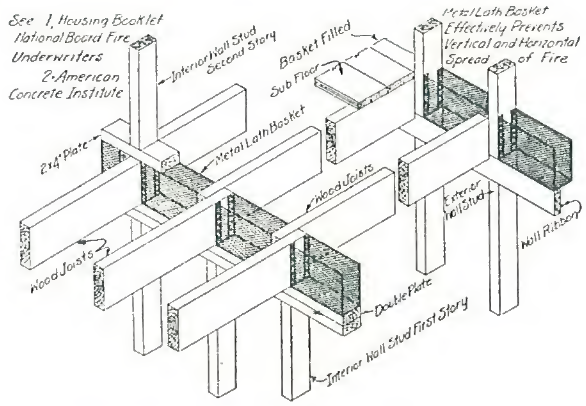
Metal Lath and to extend the protection to include the corners where the chimney joins the walls. The wall back of where the kitchen range is to be placed should also be protected.

Stairways leading from one floor to another should be so constructed as to prevent the spread of the flames from floor to floor and to prevent the walls of stair wells from becoming ignited, thus cutting off the escape of occupants of the upper floor. Herringbone Metal Lath should encase the stair well on all sides, and ceilings under stairs should be equally protected.

Frequently fires start in the dead of night from overheated flues and gain great headway before they are discovered. Coal is sometimes ignited from spontaneous combustion, while loose paper or kindling stored in the coal bin may become ignited through the careless disposal of a lighted match. For such reasons, ceilings under inhabited floors, especially over the heating plant or coal bin should be safeguarded with Herringbone.

A practical test of the fire-protection Herringbone construction gives, is found in the residence illustrated on page 22. This house would undoubtedly have burned if the basement ceiling had not been plastered over Herringbone Lath. Fire started in the fuel room—a quantity of wood became ignited. Frozen water plugs prevented quick action by the fire department. But the Herringbone Lath ceiling held the fire in check until it could be extinguished.

This is only one instance where Herringbone Metal Lath fulfilled the trust placed in it by the



Baskets of Herringbone or Key Lath at floor levels, filled with incombustible materials prevent the vertical and horizontal spread of fire.

builder. There are many others. Also, there are the records of authorities on fire-resistive materials; consider these also.

While many of the causes of cracked plaster will be eliminated by the use of Herringbone Lath at the points where fire is most likely to start or its spread facilitated, there are other places where Herringbone should be used that are strictly for crack prevention. These are the ceilings of all prominent rooms, where jarring from the upper floors may loosen the plaster; back of wainscots and tile mantels where the load is exceptionally heavy; across plumbing pipes and heat ducts where the plaster is subjected to heat and moisture; and the angles between all interior walls where the effect of unequal settling of the foundation is usually most pronounced.

SPECIFICATIONS

For the Use of Herringbone Metal Lath on Wood Joists and Studs

(*a*) Herringbone Metal Lath weighing not less than 2.5 lbs. per square yard shall be used on all wood stud partitions with a maximum span of 16 inches on centers.

(*b*) For ceilings attached to wood joists, Herringbone Metal Lath weighing not less than 3 lbs. per square yard shall be used. Joists shall be spaced not to exceed 16 inches on centers.

(c) The Herringbone Metal Lath shall be attached to wood studs and joists by not less than 6d nails or 1¼ inch No. 14 gauge wire staples driven to a penetration of not less than ⅞ inch and spaced not to exceed 6 inches on centers; provided further, that ¾ inch No. 14 gauge wire staples may be used in lieu of 1¼ inch staples when Underwriters' Standards are not exacted.

(*d*) Tie wire shall be not less than No. 18 gauge galvanized soft annealed.

(*e*) The Herringbone Metal Lath shall be erected with the ribs running across the supports; on vertical supports the face of the rib should slope upward away from the studs. (See illustration page 4.)

(*f*) Lath shall be first applied to the ceilings and the sheets carried down 6 inches on to the walls and partitions. If Herringbone is not used on the ceilings, the lathing may start at the top of the wall and be bent and carried up 6 inches on to the ceiling joists so that no joints occur at juncture of ceiling and walls; and on walls, all

lath shall be started one stud away from the corner of the room and be bent into the corner and carried on to the abutting wall so as to avoid a joint at juncture of walls.

(*g*) Sheets shall be placed so that top-most rib of lower sheet laps over bottom rib of upper sheet—not vice versa. A nail or staple shall be placed where ribs lap at each support. On walls nails shall be clinched upward, not downward.

(*h*) No side lap is necessary other than the nesting of outside ribs of adjacent sheets as specified in paragraph (*g*). Sheets shall be lapped not less than 1 inch at ends. End laps shall occur over supports only.

Note: Wherever wood lath (or plaster board) is used, strips of GF Key Expanded Metal Lath 12 inches wide cut from sheets weighing not less than 2.2 pounds per square yard shall be bent into the shape of an "L" 6 inches on each side, and applied in all vertical corners and into corners between ceilings and partitions and lightly attached over the wood lath or plaster board, to reinforce the plaster and prevent corner cracks.

Herringbone Metal Lath Alternate Specifications

(See page 23)

Plastering specifications for residences in which wood lath predominates should call for Herringbone Metal Lath as follows:

(1) *Metal Lath over the heating plant and fuel storage.*

That portion of the basement ceiling directly over the heating plant and fuel storage and extending 3 feet beyond the outlines thereof and that portion of such ceiling over hot air and smoke pipes shall be protected by Herringbone Rigid Metal Lath and plaster.

(2) *Bathroom Wainscot.*

The entire bathroom wainscot shall be lathed with Herringbone Rigid Metal Lath (whether for tile backing or for plaster).

In addition to the above, contractor shall submit bids on the following two alternates:

Alternate I

Furnish and Install

(1) Herringbone Rigid Metal Lath on the ceilings of the living room, dining room, entry hall, and around and under the stairs and stairwell where exposed to view from the main floor.

(2) A 12 inch strip of GF Key Expanded Metal Lath bent into the shape of an "L" (Cornerite) and applied over wood lath in the corners of the living room, dining room and stair hall (to prevent corner cracks) wherever wood lath is used.

Alternate II

(In addition to the preceding) Furnish and Install

(1) Herringbone Rigid Metal Lath for the walls of the living room, dining room and entry hall.

(2) Herringbone Metal Lath for the balance of the basement ceiling.

Weights and Attachments for Metal Lath

Note: Minimum weights of Herringbone Metal Lath specified above shall be as follows:

For walls and partitions 2.5 pounds per square yard.

For ceilings, 3 pounds per square yard.

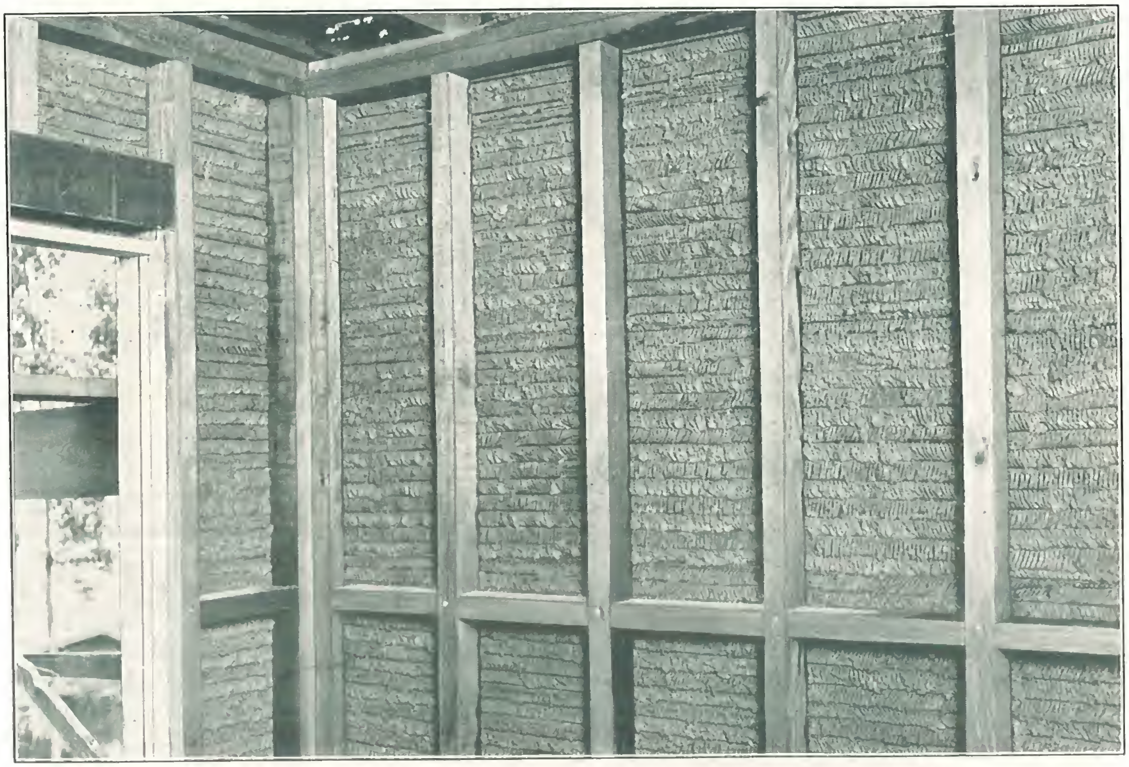
Herringbone Metal Lath shall be attached to wood studs and wood joists by not less than 6d nails or by equivalent staples.

Back-Plastered Herringbone Stucco Construction

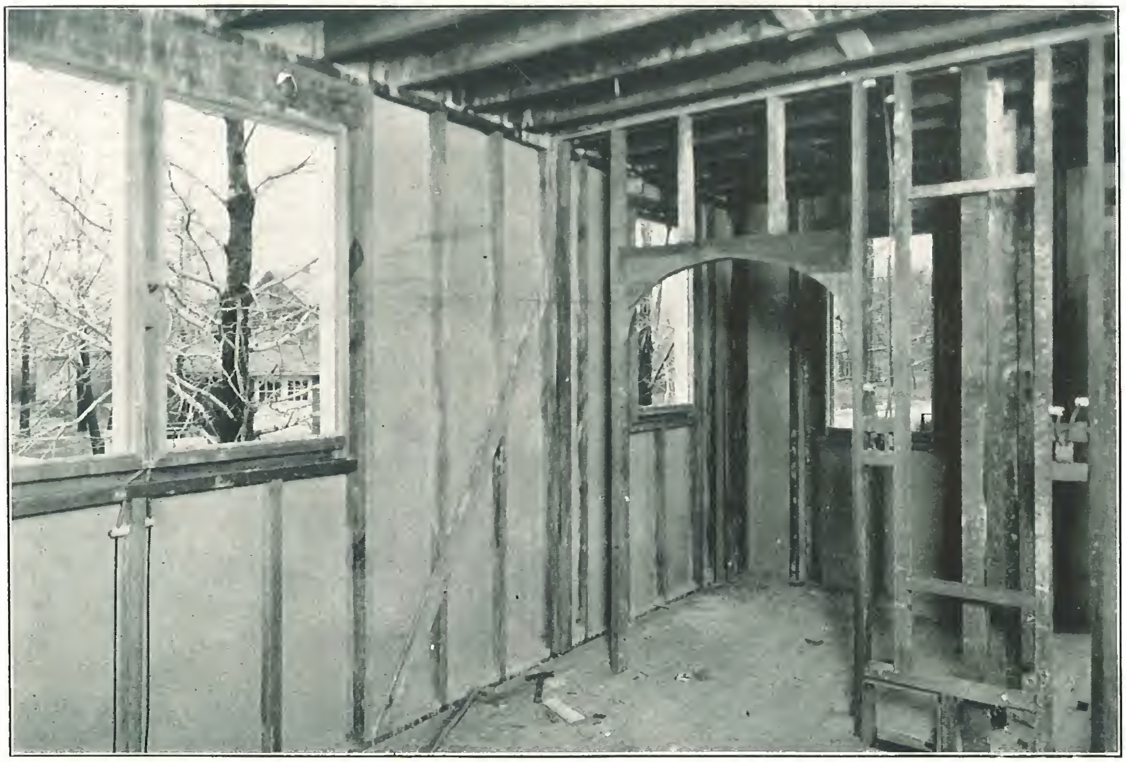
A type of construction for homes that is now very popular, because of its medium original cost, durability, low maintenance and beauty of finish is wood frame construction with stucco back-plastered on Herringbone Metal Lath for the exterior wall, and with plaster on Herringbone for the interior.

By the use of this type of construction, the economy of erection of the frame house is retained and permanency and lasting beauty added. The beauty of the stucco house, properly erected by experienced builders, is unsurpassed. Its beauty is of a permanent nature and does not require periodical renewal by applications of paint.

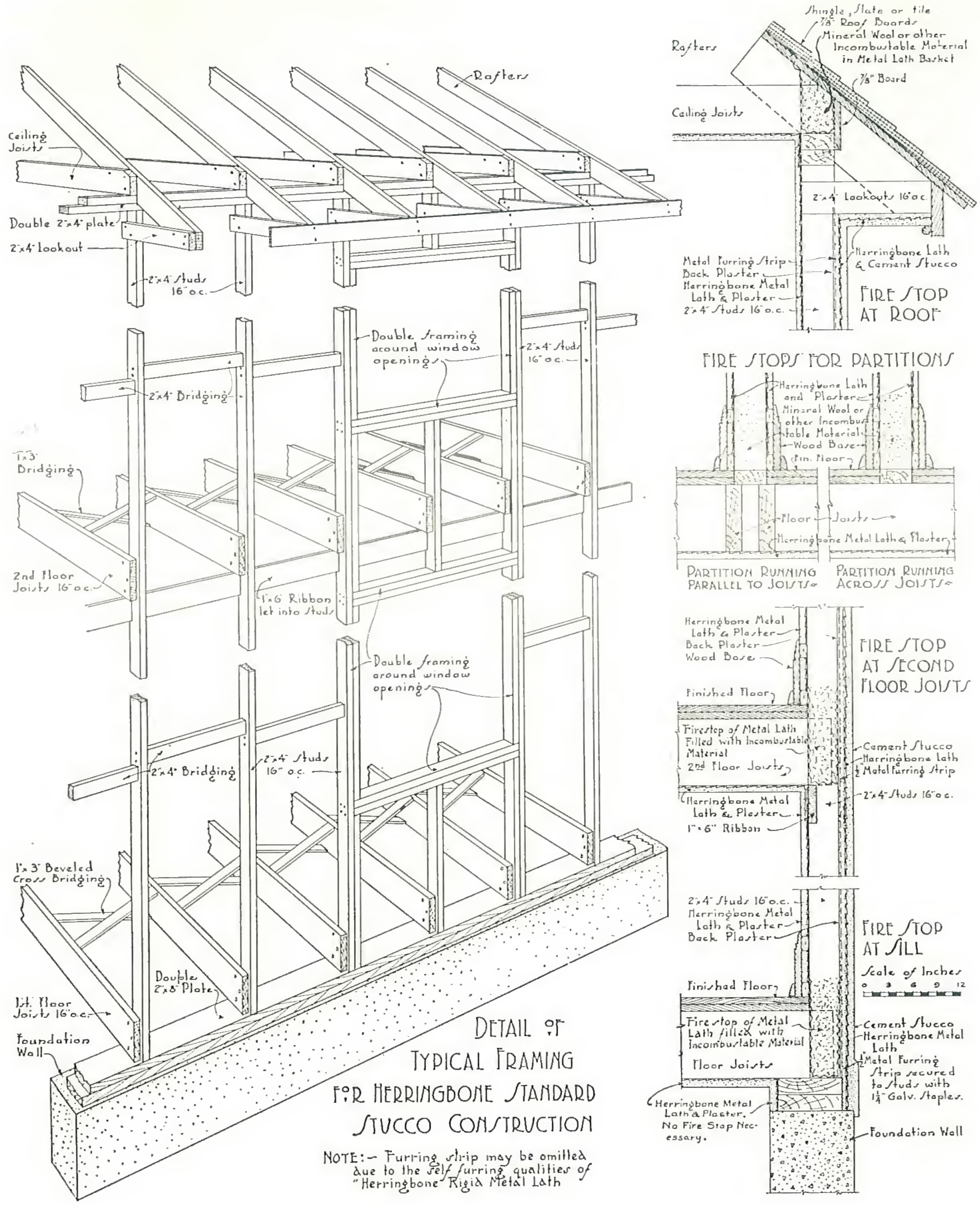
The matter of original cost is of prime importance to the prospective home builder. Naturally he wishes the best home he can possibly build with the money available. If he spends too lavishly on the exterior walls, the amount left for the interior decorations and the domestic utilities will be so limited as to preclude the attainment of those interior arrangements that make the home ideal. On the other hand, if he over-economizes on the exterior walls at the



Herringbone Back Plastered Construction. Key formed on the back of Herringbone Metal Lath before the application of the back plaster coat. Note how the cement plaster thoroughly embeds the strands of the lath.



Herringbone Back Plastered Stucco Construction. Showing lath back plastered between the studs. By this method the metal lath is completely sealed in and protected by the cement plaster.



The General Fireproofing Building Products Youngstown, Ohio	Standard Framing for Stucco on Herringbone Metal Lath	*The General Fireproofing Building Products Youngstown, Ohio*

expense of durability he will only invite future maintenance expense and early decay. In the end, maintenance expense will more than offset the additional cost of more substantial exterior construction.

Cement stucco on Herringbone is the happy medium between expensive brick or masonry construction at the one extreme and the less expensive and less durable all-wood construction at the other.

Stucco Houses the Most Economical

Recent investigation shows that stucco on Herringbone and wood studding is less expensive to build than where wood is used throughout, while the cost of painting and repairing adds a periodical expense to the cost of the wooden structure not encountered in the stucco house.

In addition to economy of construction, the fundamental requirements of a good home are beauty, permanence and safety. Some of the most charming homes in our finest residential sections are of this construction. With stucco properly applied to Herringbone, with wood trim finished in harmonious colors and with well laid out grounds, the stucco house cannot be equalled for lasting beauty.

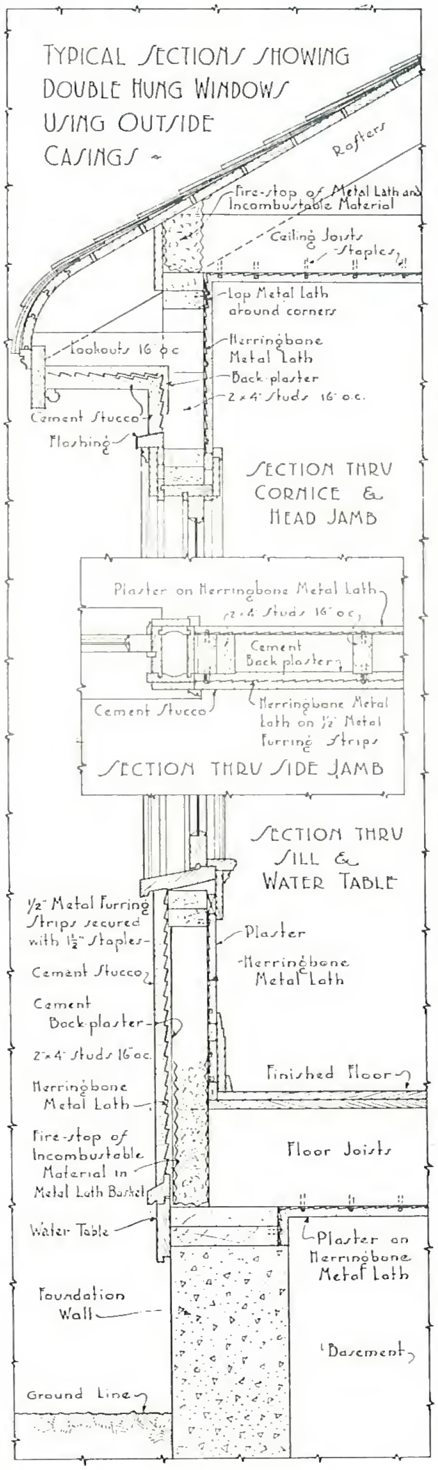
How the Herringbone Home is Built

Up to the point where the stucco is put on, the construction of the Herringbone home differs from that of the all-wood house only in a few framing details intended to give greater rigidity to the framework. At this point, instead of nailing wooden sheathing and siding to the framework, as is done in the case of the all-wood construction, Herringbone Metal Lath is securely fastened to the studding by nailing or stapling and the cement stucco applied directly to it.

Because of its reinforcing ribs, Herringbone is more rigid than other types of metal lath and will not sag between supports. This property of extreme rigidity also enables one man to apply full sheets of Herringbone without an assistant. Thus Herringbone always effects a substantial saving in both materials and labor, which means money in the pocket of the home builder.

Plasterers also prefer Herringbone Rigid Metal Lath because it takes less mortar and because such materials are more easily applied. The horizontal reinforcing ribs effectively support the stucco when in its most plastic condition, while the flattened cross strands guide the mortar through the mesh and curl it around the strands, completely encasing them. Less mortar is pushed through the lath to be wasted and because of its exceptional rigidity, Herringbone takes less plaster to give an even surface.

Meckelberg Residence, Two Rivers, Wisconsin. Back plastered stucco on Herringbone Armco Iron Lath. Ludolph M. Hansen Co., Green Bay, Wisconsin, Architects and Contractors.



Cement Stucco Construction on Herringbone Metal Lath. Back Plastered.

Place "Herringbone" Rigid Metal Lath directly over studding or over a previously placed furring strip as shown.

Furring strips are not necessary on account of the self-furring qualities of Herringbone.

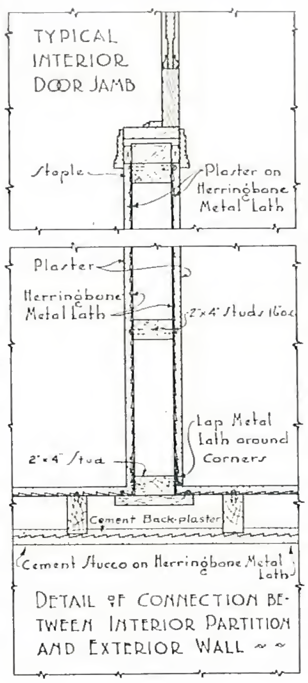
Attach lath directly or over furring strips with 1¼" 14 ga. wire staples approximately 8" c-c. Staples to span heavy ribs of lath and furring strips.

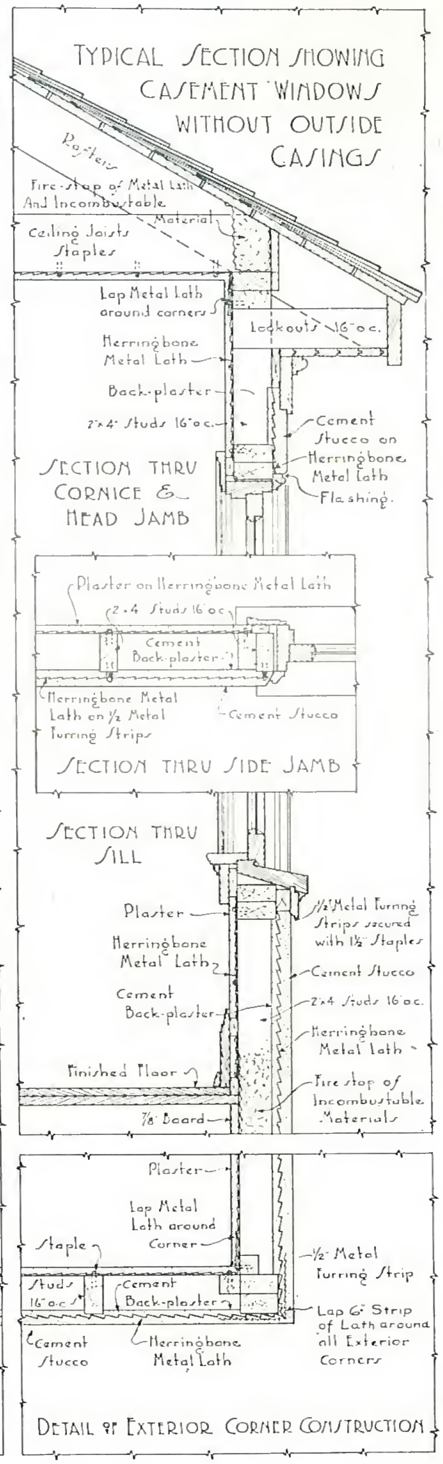
All Herringbone Metal Lath to be placed horizontally.

Cement Plaster applied to exterior face and Cement Back Plaster to inner face between studs.

See complete Specifications—

Scale of Details — 12 11 10 9 8 7 6 5 4 3 2 1 0 — Inches — 12





The General Fireproofing Building Products Youngstown, Ohio	**Back-Plastered Stucco on Herringbone Metal Lath**	*The General Fireproofing Building Products Youngstown, Ohio*

Not only can stucco be given interesting color effects, but it can also be given effects in texture.

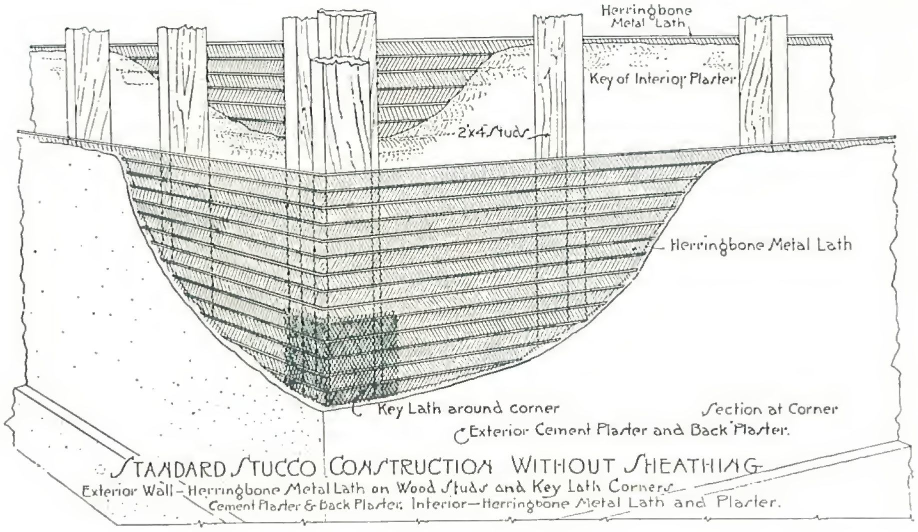
Courtesy of
The Atlas Portland Cement Company

With change of temperature, steel lath and cement mortar expand and contract together. Consequently there is no tendency for stucco on Herringbone Metal Lath to break away from its support because of temperature expansion. Stucco on Herringbone Metal Lath is not dependent on adhesion, but has a mechanical bond which holds it permanently in place.

When sufficient time has elapsed for the first coat of stucco to set, the plasterer goes inside the house and applies a coat of the same material to the back of the Herringbone lath between the studding. This coat completely covers the "key" of the outer coat which has been formed around the rear faces of the mesh work. This is known as "back-plastering" and its purpose is to form a solid slab of stucco, reinforced by the metal lath, in which the metal is completely protected from the elements. The remaining two outer coats are then put on at the proper intervals to insure a perfect bond between successive applications, and to effect a pleasing finish.

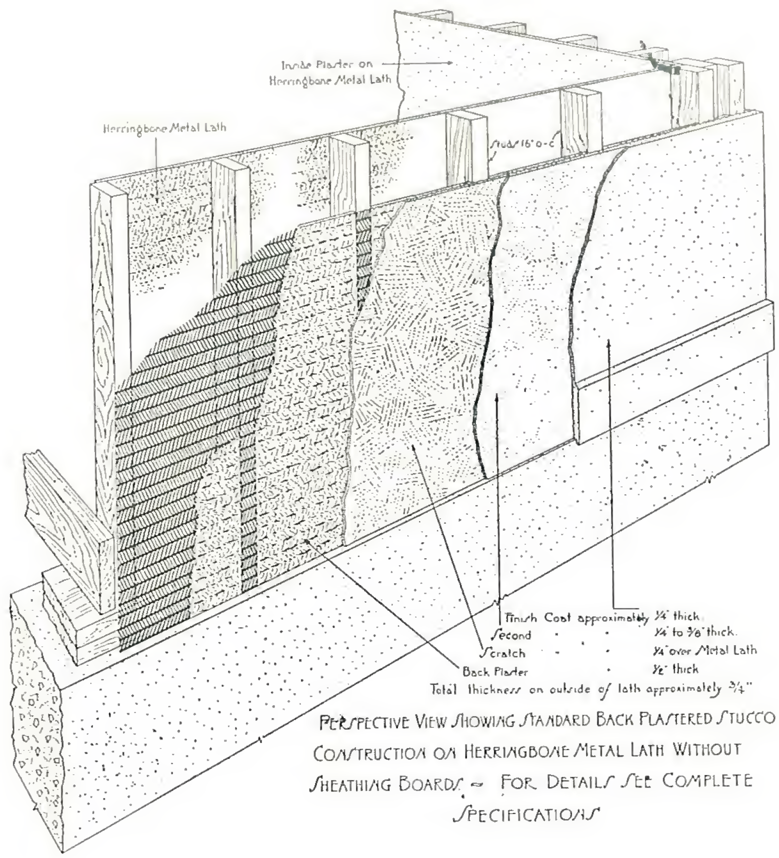
The finish coat may be treated in a variety of ways, depending on the effect desired. It may be trowelled smooth with a metal trowel; stippled by lightly patting with a brush after trowelling; sand floated with a wood float and the addition of a little sand to roughen the surface; sand sprayed by means of a whisk broom dipped into a creamy mix of equal parts of sand and cement and sprayed forcibly against the surface to be finished; spatter dash or rough cast by throwing forcibly against a smooth finish a mix of one part cement and two parts sand; pebbly dash by throwing clean wet pebbles against the smooth surface before it has set; exposed aggregates by scrubbing the finish with a solution (1 to 4) of hydrochloric acid, thus exposing the coarse particles of sand, marble dust, granite dust or whatever special material may have been used in the mix for this purpose. Any of these finishes may be colored by adding mineral colors to the last coat when it is being mixed.

The finish coat of stucco should be waterproofed with GF No. 10 Integral Waterproofing Paste. This preparation is mixed with the gauging water and insures permanent protection from frost action and driving rains.



STANDARD STUCCO CONSTRUCTION WITHOUT SHEATHING

Exterior Wall—Herringbone Metal Lath on Wood Studs and Key Lath Corners—Cement Plaster & Back Plaster. Interior—Herringbone Metal Lath and Plaster.



PERSPECTIVE VIEW SHOWING STANDARD BACK PLASTERED STUCCO CONSTRUCTION ON HERRINGBONE METAL LATH WITHOUT SHEATHING BOARDS — FOR DETAILS SEE COMPLETE SPECIFICATIONS

The General Fireproofing Building Products Youngstown, Ohio	Back-Plastered Stucco Details Showing Use of Herringbone Metal Lath	*The General Fireproofing Building Products Youngstown, Ohio*

The Strength of Back-Plastered Construction

Years ago it was thought necessary to nail wood sheathing to wood studs before the application of the metal lath and stucco. This custom has persisted in some localities but the back plastered form of construction has been found to be superior in every way both by laboratory test and in actual use.

To determine the strength of back-plastered construction in resisting distortion, two distinct tests have been made—one at the Armour Institute of Technology by Professor J. C. Peebles and the second before the Omaha Building Committee. Both proved the great superiority of back-plastered metal lath over all other forms of stucco construction.

Professor Peebles tested three panels made in conformity to accepted standards and representing three distinct types of stucco construction as follows:

Sample No. 1—Six inch, standard hollow building tile, laid in Portland cement, stuccoed with Portland cement; plaster on the inside, gypsum plaster.

Sample No. 2—Portland cement stucco on 3.4 lb. metal lath, furred out over 7/8" sheathing, nailed to 2 x 4 studs. Inside plaster on 2.5 lb. metal lath.

Sample No. 3—Back-plastered construction using Portland cement on metal lath for stucco and gypsum plaster on metal lath for interior wall.

The samples were 42 x 42 inches and were tested in an Olson machine with the direct pressure on opposite diagonal corners. The final crushing strength of the three panels was—hollow tile, 9600 pounds; stucco on metal lath over wood sheathing, 10,000 pounds; back-plastered construction, 14,200 pounds.

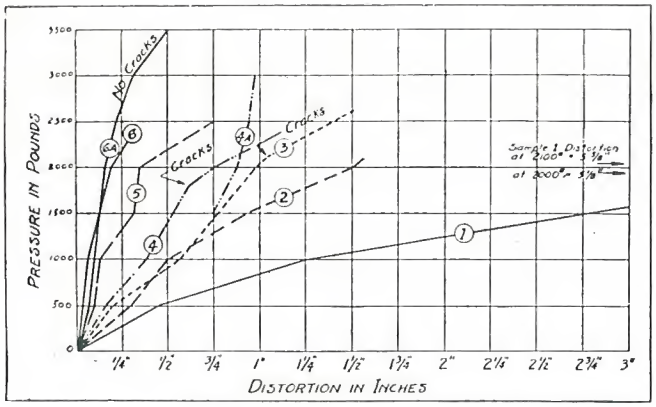
The second test, and one very similar to the one conducted by Professor Peebles was recently completed at Omaha before the Building Committee. These investigations again proved the great resistance of back-plastered construction to distortion. Where wood sheathing, lath and cement stucco showed cracks at 2100 pounds pressure, the back-plastered metal lath sample showed no cracks at 3500 pounds, the limit of the machine. Distortion at 2100 pounds for the back-plastered construction was $\frac{3}{16}$" whereas for the sheathed construction it was $1\frac{1}{8}$".

Other tests were made on stucco applied over wood lath and patent wood bases with the results shown in the following diagram:

Sample No. 1—Wood Sheathing—no Stucco.

Sample No. 2—Bishopric Sheathing—no Stucco.

Sample No. 3—Wood Sheathing—Building Paper—Strips—Wood Lath—Cement Stucco.



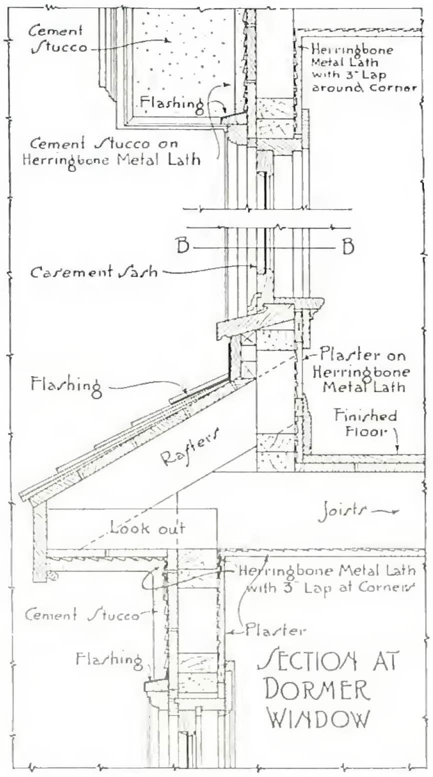
Stiffness of Back Plastered Stucco on metal lath, as shown by test before Omaha Building Committee, June 10, 1920.

Sample No. 4 and 4A—Bishopric Stucco Board—Cement Stucco applied.

Sample No. 5—Wood Sheathing—Building Paper—Strips—Wood Lath—Magnesite Stucco.

Sample No. 6 and 6A—Back Plastered Metal Lath—Portland Cement Stucco.

The tests prove that back-plastered cement stucco on metal lath is stronger than any other wall except solid masonry.



SECTION AT DORMER WINDOW

CEMENT STUCCO CONSTRUCTION ON HERRINGBONE METAL LATH OVER ÷ SHEATHING ÷

Apply 1" sheathing, 6" to 8" wide either horizontally or diagonally.

Sheathing should be nailed at quarter points as shown in detail section.

Heavy waterproof building paper placed over sheathing boards.

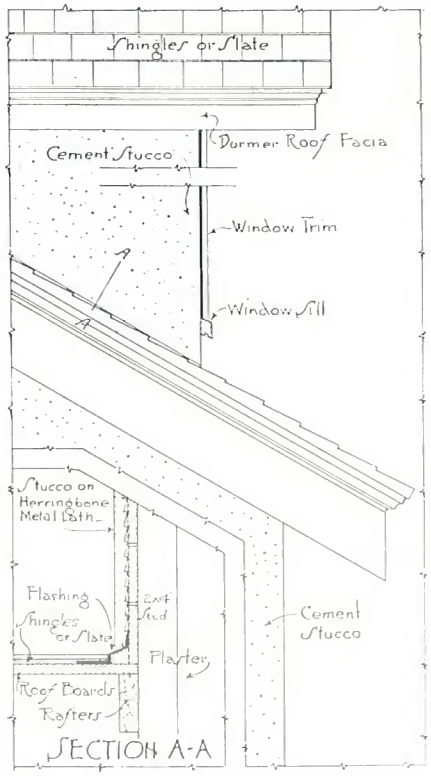
Over heavy waterproofing building paper attach 3.4 lb. Herringbone Metal Lath with $1\frac{1}{4}$", 14 gauge staples spaced approximately 6 in. c to c.

Staples to span heavy horizontal ribs of the lath.

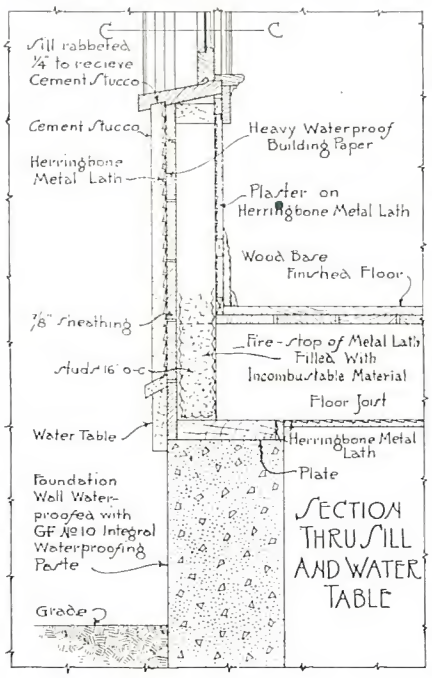
All sheets to be placed horizontally with the interlocking edges of adjacent sheets stapled together and wired midway between studs.

Allow approximately 1" for end laps of sheets.

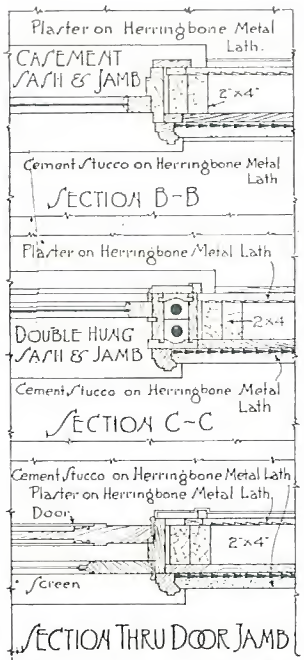
See complete Specifications



SECTION A-A



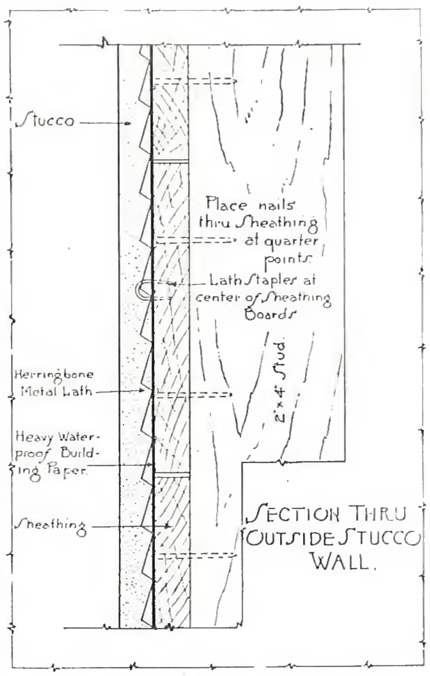
SECTION THRU SILL AND WATER TABLE



SECTION B-B

SECTION C-C

SECTION THRU DOOR JAMB



SECTION THRU OUTSIDE STUCCO WALL.

Cement Stucco Details
Herringbone Lath over Sheathing

The General Fireproofing Building Products Youngstown, Ohio

Fire Protection Given by Back-Plastered Stucco

While statistics show that only about 4% of the residential fires are traceable to external sources, it gives a feeling of relief to know that one's home is protected by a fire-resisting wall of reinforced concrete, one and one-half inches thick on all sides.

A number of fire tests have been made on back-plastered construction among which is the one shown in the accompanying illustrations.

The pictures below show two views of a unique test to demonstrate the superiority of Herringbone Metal Lath construction over wood construction.

The test house was a small shed, six and a half feet wide by eleven feet long over all. It was built throughout with wood joists and studs and divided transversely by a partition which was lathed on both sides with Herringbone Lath and plastered. On one side of this partition the house was covered with wood sheathing and drop siding, the inside was lathed, walls and ceiling, with wood lath and plastered; and the roof was covered with wood shingles. Altogether this side was the raw material for a bonfire. The other side was covered outside with back-plastered cement stucco on Herringbone Metal Lath, the inside walls and ceiling were plastered on Herringbone Lath, and the roof was covered with asbestos shingles. Except for the difference in the lath and the shingles, both sides were exactly alike.

A weighed quantity of wood, alike for both sides of the house, was then placed around the outside walls and inside each room, and fires were set simultaneously both outside and inside both rooms.

In two minutes the wood trim was afire on both sides of the house; in five minutes the wood eaves were burning; and in fourteen minutes the fire was through the wood roof. In ten minutes a crack appeared in the inside plaster on Herringbone Lath but it did not grow larger nor did any further failure occur on this side of the house. In twenty-seven minutes the wood side of the house was completely gone while the Herringbone Lathed side was completely intact, with the fuel used in starting the flames reduced to a harmless glow. A smouldering blaze, crawling along the roof boards from the defunct wood side to the metal lathed side was extinguished, and the test was over.

A preliminary report from the Underwriters' Laboratories, Chicago, on back-plastered metal lath and stucco construction with Portland cement indicates that "this finish can be expected to furnish a substantial barrier to the passage of flame into the hollow spaces back of it for about one hour when exposed to fire of the degree of severity to which stucco finished buildings are likely to be subjected under average exterior fire exposures."

A test house was constructed—one half being standard frame construction with wood siding and plaster on wood lath, the other half being cement stucco on Herringbone Metal Lath back plastered, and interior plastered over Herringbone attached to wood studs.

Both halves of the test house were set on fire simultaneously. In less than one-half hour the all frame half was reduced to ashes. The back plastered stucco portion survived the flames as the picture clearly shows.

Residence of S. C. Hall,
Palm Beach, Fla.
Architect, S. C. Hall.

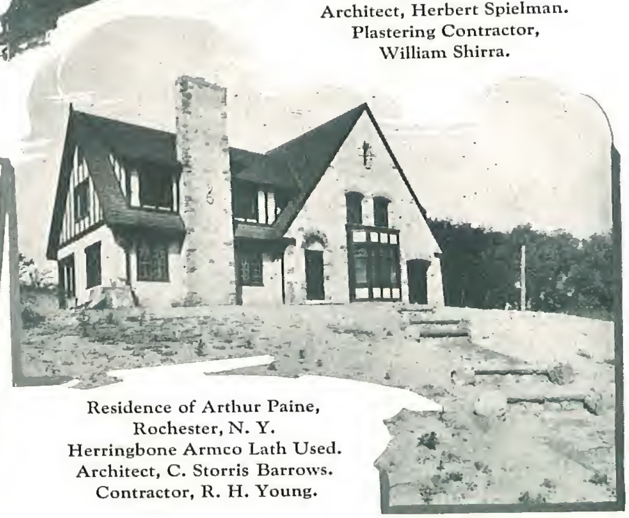
Residence of A. G. Dickinson,
Grand Rapids, Mich.
Herringbone Armco Lath inside and out.
Architect, Kenneth Welsch.
Plastering Contractor, Peter Silje.

Cropsey Construction Co.,
Brooklyn, N. Y.
Contractor, Benj. Kaiser.

Noelting Residence, Evansville, Ind.
Architect, Fritz Anderson. Contractor, John Nellis.
Herringbone Armco Lath used.

Residence of Harry W. Maescher,
Cincinnati, Ohio.
Architect, Herbert Spielman.
Plastering Contractor,
William Shirra.

H. Schultz Residence, Los Angeles, Calif.
Architect, Elmer Grey.
Contractor, L. P. Pumery.
Herringbone Armco Lath.



Residence of Arthur Paine,
Rochester, N. Y.
Herringbone Armco Lath Used.
Architect, C. Storris Barrows.
Contractor, R. H. Young.

Homes of Cement Stucco on Herringbone Rigid Metal Lath

Heat-Insulating Value of Back-Plastered Stucco

Upon the ability of exterior walls to resist the transmission of heat depends the size of the fuel bill and the comfort of the occupants in both winter and summer. It has long been recognized that stucco homes are warm in winter and cool in summer but it remained for Prof. J. C. Peebles of the Armour Institute of Technology to demonstrate by laboratory tests the actual value of back-plastered stucco as an insulator in relationship to other forms of fire resistive construction.

A series of tests was performed both to determine the effect of using various paper and felt insulations in connection with back-plastered stucco and to establish the relative value of back-plastered stucco, brick and tile constructions with and without extra insulation.

The insulating value of window glass was taken as the standard. Back-plastered stucco without building paper was found to have an insulating value 1.82 times that of glass, brick veneer with sheathing and common building paper 1.76 times and stucco over hollow tile 1.45 times. By using building paper as an added insulation for back-plastered stucco the insulating value of the wall was found to be 2.36 times that of glass or 33% greater than brick veneer with sheathing and building paper and 62% greater than hollow tile and stucco.

Durability of Back-Plastered Stucco Construction

An extensive, practical investigation has been performed by the United States Bureau of Standards on the permanency of stucco, as applied to various bases and with various mixtures. Fifty-six panels were erected in 1915, and were under constant observation for two years. These panels were built in such a way that the conditions would be as near to ordinary wear and tear as possible.

Reports were made each month as to the condition of each of these 56 panels and whether they would stand up under service conditions. The time allowed was sufficient to get a fair test of the different kinds of panels. Some of them show up very well; others do not show up as well.

These panels were erected in accordance with the instructions and specifications of all manufacturers concerned.

In the final report, as issued by the United States Bureau of Standards, the metal lath back-plastered panel on frame construction was the only one receiving a 100% rating.

Copies of above Technologic Paper, No. 70, can be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C.

STANDARD SPECIFICATIONS FOR CEMENT STUCCO ON HERRINGBONE METAL LATH

Adopted from Standard Specification by American Concrete Institute

GENERAL REQUIREMENTS

DESIGN—Whenever the design of the structure permits, an overhanging roof or similar projection is recommended to afford protection to the stucco. Stuccoed copings, cornices, and other exposed horizontal surfaces should be avoided whenever possible. All exposed stuccoed surfaces should shed water quickly, and wherever departure from the vertical is necessary, as at water tables, belt courses, and the like, the greatest possible slope should be detailed. Stucco should not be run to the ground whenever other treatment is possible.

FLASHING—Suitable flashing should be provided over all door and window openings wherever projecting wood trim occurs. Wall copings, cornices, rails, chimney caps, etc., should be built of concrete, stone, terra cotta, or metal with ample overhanging drip groove or lip and water-tight joints. If copings are set in blocks with mortar joints, continuous flashing should extend across the wall below the coping and project beyond and form an inconspicuous lip over the upper edge of the stucco. This flashing should be so installed as to insure absolute protection against interior leakage. Sills should project well from the face of the stucco and be provided with drip grooves. Sills should also be provided with stools or jamb seats to insure wash of water over the face and not over the ends. Special attention should be given to the design of gutters and down spouts at returns of porch

roofs where overflow will result in discoloration and cracking. A 2-inch strip should be provided at the intersection of walls and sloping roofs and flashing extended up and over it, and stucco being brought down to the top of the strip.

PREPARATION OF ORIGINAL SURFACE—All roof gutters should be fixed, and down spout hangers and all other fixed supports should be put in place before the plastering is done, in order to avoid breaks in the stucco.

Herringbone should be stopped not less than 6 inches above grade to be free from ground moisture.

All trim should be placed in such manner that it will show its proper projection in relation to the finished stucco surface, particularly in overcoating.

Walls

FRAMING—Studs spaced not to exceed 16-inch centers should be run from foundation to rafters without any intervening horizontal members. The studs should be tied together just below the floor joists with 1 x 6 inch boards which should be let into the studs on their inner side, so as to be flush and securely nailed to them. These boards will also act as sills for the floor joists, which, in addition, should be securely spiked to the side of the studs.

BRACING—The corners of each wall should be braced diagonally with 1 x 6 inch boards let into the studs on their inner side, and securely nailed to them.

In back-plastered construction in which sheathing is omitted, at least once midway in each story height, the studs should be braced horizontally with 2 x 3 inch bridging set 1 inch back of the face of the studs. This assumes that the studs are 2 x 4 inches. Larger sizes would require correspondingly larger bridging.

In sheathed construction no bridging is necessary.

SHEATHING—In back-plastered construction, Herringbone lath should be fastened direct to the studding and back-plastered. No sheathing is used.

In sheathed construction the sheathing boards should be not less than 6 inches nor more than 8 inches wide, dressed on one or both sides to a uniform thickness of 13-16 inch. They should be laid horizontally across the wall studs and fastened with not less than two 8d nails at each stud.

Waterproof Paper

In back-plastered construction no waterproof-paper is necessary.

In sheathed construction, over the sheathing boards should be laid in horizontal layers, beginning at the bottom, a substantial paper, well impregnated with tar or asphalt. The bottom strip should lap over the base-board at the bottom of the wall, and each strip should lap the one below at least 2 inches. The paper should lap the flashings at all openings.

FURRING—Metal Lath. When Herringbone Rigid Metal Lath is used, separate furring as described in this paragraph may be omitted, because of the self-furring qualities of Herringbone.

In back-plastered construction painted ½-inch crimped furring, not lighter than 22-gauge, or other shape giving equal results, should be fastened direct to the studding, using 1¼ inch x 14-gauge staples spaced 12 inches apart.

In sheathed construction, galvanized or painted ½-inch crimped furring not lighter than 22-gauge, or other shape giving equal results, should be fastened over the sheathing paper and directly along the line of the studs, using 1¼-inch x 14-gauge staples spaced 12 inches apart. The same depth of furring should be adhered to around curved surfaces, and furring should be placed not less than 1½ inches nor more than 4 inches on each side of and above and below all openings.

LATH—Metal Lath shall be Herringbone Rigid Metal Lath, galvanized, painted or Armco Ingot Iron, weighing not less than 3.4 lb. per square yard.

APPLICATION OF LATH—Herringbone Rigid Metal Lath should be placed horizontally, with edges interlocking, and attached by 1¼-inch by 14-gauge wire staples or 6d nails driven to a penetration of at least ⅞ of an inch and bent to engage at least one rib, not more than 8 inches apart over the furring or stiffeners. Vertical laps should occur at supports and should be fastened with staples or 6d nails not more than 4 inches apart. Horizontal interlocking edges shall be locked, and tightly wired with 18-gauge black wire.

NOTE—With Herringbone Lath, furring is omitted, and the lath placed horizontally over the studs and fastened by ¼-inch by 14-gauge galvanized staples or 6d nails 8 inches apart as mentioned above.

CORNERS—Metal Lath. The sheets of metal lath should be folded around the corners a distance of at least 3 inches and stapled down, as applied. The use of corner bead is not recommended.

INSULATION—The air space in back-plastered walls may be divided by applying building paper, quilting, felt, or other suitable insulating material between the studs, and fastening it to the studs and bridging by nailing wood strips over the folded edges of the material. This insulation should be so fastened as to leave about 1 inch air space between it and the stucco. Care should be taken to keep the insulating material clear of the stucco, and to make tight joists against the wood framing at the top and bottom of the space and against the bridging.

OVERCOATING—Old frame walls which are to be overcoated should be made structurally sound in every respect, and, as far as possible, the general conditions on page 42 should be observed; otherwise the recommended practice for frame structures applies.

Materials

CEMENT—The cement should meet the requirements of the standard specifications for Portland cement of the American Society for Testing Materials, and adopted by The American Concrete Institute. (Standard No. 1.)

FINE AGGREGATE—Fine aggregate should consist of sand, or screenings from crushed stone or crushed pebbles, graded from fine to coarse, passing when dry a No. 8

screen. Fine aggregate should preferably be of silicious materials, clean, coarse, and free from loam, vegetable, or other deleterious matter.

HYDRATED LIME—Hydrated lime should meet the requirements of the standard specifications for hydrated lime of the American Society for Testing Materials.

HAIR OR FIBER—There should be used only first quality long hair, free from foreign matter, or a long fiber well combed out.

COLORING MATTER—Only mineral colors should be used which are not affected by lime, Portland cement, or other ingredients of the mortar, or the weather.

WATER—Water should be clean, free from oil, acid, strong alkali or vegetable matter.

Preparation of Mortar

MIXING—The ingredients of the mortar should be mixed until thoroughly distributed and the mass is uniform in color and homogeneous. The quantity of water necessary for the desired consistency should be determined by trial, and thereafter measured in proper proportion.

MACHINE MIXING—The mortar should preferably be mixed in a suitable mortar mixing machine of the rotating drum type. The period of machine mixing should be not less than 5 minutes after all the ingredients are introduced into the mixer.

HAND MIXING—The mixing should be done in a watertight mortar box, and the ingredients should be mixed dry until the mass is uniform in color and homogeneous. The proper amount of water should then be added and the mixing continued until the consistency is uniform.

MEASURING PROPORTIONS—Methods of measurement of the proportions of water should be used which will secure separate uniform measurements at all times. All proportions stated should be by volume. A bag of cement (94 lbs. net) may be assumed to contain 1 cubic foot. 40 lbs. may be assumed as the weight of 1 cubic foot of hydrated lime. Hydrated lime should be measured dry, and should not be measured nor added to the mortar in the form of putty.

RETEMPERING—Mortar which has begun to stiffen or take its initial set should not be used.

CONSISTENCY—Only sufficient water should be used to produce a good workable consistency. The less water, the better the quality of the mortar, within working limits.

Mortar Coats

MORTAR—All coats should contain not less than 3 cubic feet of fine aggregate to 1 sack of Portland cement. If hydrated lime is used, it should be not in excess of one-fifth the volume of cement. Hair or fiber should be used in the scratch coat only on metal lath which is applied over sheathing and is separated therefrom by furring deeper than ⅜ inch.

APPLICATION—The plastering should be carried on continuously in one general direction without allowing the plaster to dry at the edge. If it is impossible to work the full width of the wall at one time, the joining should be at some natural division of the surface, such as a window or door.

The first coat should thoroughly cover the base on which it is applied and be well troweled to insure the best obtainable bond. Before the coat has set it should be heavily cross-scratched with a saw-toothed metal paddle or other suitable device to provide a strong mechanical key.

The second coat should be applied whenever possible, on the day following the application of the scratch coat. The first coat should be dampened if necessary, but not saturated, before the second coat is applied. The second coat should be brought to a true and even surface by screeding at intervals not exceeding 5 feet, and by constant use of straightening rod. When the second coat has stiffened sufficiently, it should be dry floated with a wood float and lightly and evenly cross-scratched to form a good mechanical bond for the finish coat. The day following the application of the second coat, and for not less than three days thereafter, the coat should be sprayed or wetted at frequent intervals and kept from drying out.

In back-plastered construction the backing coat should preferably be applied directly following the completion of the brown coat. The keys of the scratch coat should first be thoroughly dampened, and the backing coat then well troweled on to insure filling the spaces between the keys and thoroughly covering the back of the lath. The backing coat should provide a total thickness of plaster back of the lath of ⅝ or ¾ inches.

The finish coat should be applied not less than a week after the applications of the second coat. Methods of application will hereinafter be described under "finish."

DRYING OUT—The finish coat should not be permitted to dry out rapidly, and adequate precaution should be taken, either by sprinkling frequently after the mortar is set hard enough to permit it, or by hanging wet burlap or similar material over the surface.

FREEZING—Stucco should not be applied when the temperature is below 32 degrees F., unless a reliable frost preventive such as GF 12 Cement Accelerator is used, nor under any conditions such that ice or frost may form on the surface of the wall.

Finishes

STIPPLED—The finishing coat should be troweled smooth with a metal trowel with as little rubbing as possible, and then should be lightly patted with a brush or broom straw to give an even, stippled surface.

SAND FLOATED—The finishing coat, after being brought to a smooth, even surface, should be rubbed with a circular motion of a wood float with the addition of a little sand to slightly roughen the surface. This floating should be done when the mortar has partly hardened.

SAND SPRAYED—After the finishing coat has been brought to an even surface, it should be sprayed by means of a wide, long fiber brush—a whisk broom does very well—dipped into a creamy mixture of one part of cement to two or three parts sand, mixed fresh at least every 30

minutes, and kept well stirred. This coating should be thrown forcibly against the surface to be finished. This treatment should be applied while the finishing coat is still moist and before it has attained its early hardening, that is, within 3 to 5 hours. To obtain lighter shades add hydrated lime not to exceed 10% of the weight of the cement.

ROUGH-CAST OR SPATTER DASH—After the finishing coat has been brought to a smooth, even surface with a wooden float, and before finally hardened, it should be uniformly coated with a mixture of one sack of cement to 3 cubic feet of fine aggregate thrown forcibly against it to produce a rough surface of uniform texture when viewed from a distance of 20 feet. Special care should be taken to prevent the rapid drying out of this finish by thorough wetting down at intervals after stucco has hardened sufficiently to prevent injury.

APPLIED AGGREGATE—After the finishing coat has been brought to a smooth, even surface, and before it has begun to harden, clean, round pebbles, or other material as selected, not smaller than ¼ inch or larger than ¾ inch and previously wetted, should be thrown forcibly against the wall so as to embed themselves in the fresh mortar.

They should be distributed uniformly over the mortar with a clean wood trowel, but no rubbing of the surface should be done after the pebbles are embedded.

EXPOSED AGGREGATE—The finishing coat should be composed of an approved, selected coarse sand, crushed marble, or granite or other special material, in the proportion given for finishing coats, and within 24 hours after being applied and troweled to an even surface, should be scrubbed with a stiff brush and water. In case the stucco is too hard, a solution of one part hydrochloric acid in four parts of water by volume can be used in place of water. After the aggregate particles have been uniformly exposed by scrubbing, particular care should be taken to remove all traces of the acid by thoroughly spraying with water from a hose.

MORTAR COLORS—When it is required that any of the above finishes should be made with colored mortar not more than 10% of the weight of Portland cement should be added to the mortar in the form of finely ground mineral coloring matter.

A predetermined weight of color should be added dry to each batch of dry fine aggregate before the cement is added. The color and fine aggregate should be mixed together and then the cement mixed in. The whole should be then thoroughly mixed dry by shoveling from one pile to another through a ¼ inch mesh wire screen until the entire batch is of uniform color. Water should then be added to bring the mortar to a proper plastering consistency.

The above specification is in accordance with the standard specification of the American Concrete Institute and is approved by The Associated Metal Lath Manufacturers and The Portland Cement Association.

Waterproofing Stucco

It is always advisable to use GF No. 10 Integral Waterproofing Paste in the last or finishing coat of stucco. The waterproofing of this coat assures its durability and eliminates the possibility of absorption of water, carrying soot or dirt that would discolor the wall.

The following explanatory notes on stucco should be observed in order that best results may be secured:

Successful stucco work depends in a large measure upon suitable design of the structure for stucco. Exterior plaster of any kind merits whatever protection can legitimately be given it, and while concession must sometimes be made to architectural requirements, there is rarely any necessity of subjecting stucco to an exposure which it can not reasonably be expected to withstand. Even where stucco will remain structurally sound, it is sometimes wiser to use other treatment for the sake of appearance. For example, it is better not to run stucco to grade not only because of the danger from frost action, but also to avoid staining the stucco with dirt and moisture. For the same reason special attention should be given to details of flashing and drips; wherein a little foresight will prevent much unsightly discoloration, and possibly more serious defects.

A fundamental rule in the design of a stucco structure is: "Keep water from getting behind the stucco." The architect should even go further than this and endeavor to keep any concentration of water flow from getting at the stucco at all.

Good bracing of the frame is important to secure the necessary rigidity. Bridging between the studs at least once in each story height is recommended whether the frame is to be sheathed or not.

Fire protection is an important feature of this type of structure, and some form of fire stop is necessary to develop its full fire-resistive value. Probably the best method is to form a basket of metal lath to occupy the spaces between the studs at the juncture of the floor joists and wall. This should be filled with cement mortar or concrete from the ceiling level to 4 inches above the floor level.

A preliminary report from the Underwriters Laboratories on back-plastered metal lath and stucco construction with Portland cement indicates that "this finish can be expected to furnish a substantial barrier to the passage of flame into the hollow spaces back of it, and to provide sufficient heat insulation to prevent the ignition of the wooden supports to which it is attached for about one hour when exposed to fire of the degree of severity to which stucco finished buildings are likely to be subjected under average exterior fire exposures."

When sheathing is used, it should be laid horizontally and not diagonally across the studs. The stucco test panels erected at the Bureau of Standards in 1915 and 1916 have demonstrated conclusively that diagonal sheathing tends to crack the overlying stucco by setting up strains in the supporting frame. This result is undoubtedly due to the shrinkage of the sheathing, and whatever benefit might be anticipated from the more effective bracing provided by diagonal sheathing appears to be more than offset by the shrinkage effect. Diagonal sheathing is also less economical than horizontal sheathing, both in material and labor.

Metal lath should be specified by weight rather than by gauge, and should always be painted or galvanized. Armco Ingot Iron or Galvanized Lath is a good investment and is to be recommended in preference to painted lath, unless the method of applying the stucco is such as to insure complete embodiment of the metal, as for example, in the back-plastered type of construction.

The results of tests and field observations indicate that more attention should be given to the application of lath to exterior surfaces. Cracks frequently develop in stucco overlaps or at junctions, indicating a weakness at these points. This may be due in part to reduced thickness of the stucco where the lath is lapped, or to insufficient tying and fastening, at the joints. The ideal job of lathing would obviously be that in which the lath forms a uniform fabric over the structure, without seams or lines of weakness, and with equal reinforcing value in all directions. This ideal condition cannot be realized, but evidence is at hand to indicate that butted and laced, or well tied horizontal joints are better than lapped joints, and in the case of ribbed lath, that carefully locked joints are better than lapped joints. Vertical joints must almost of necessity be lapped, but the joints may be made secure if they occur over supports and are well stapled at frequent intervals.

Tests now available prove conclusively that a back-plastered house insulated as specified is warmer than a sheathed house.

Ordinary building paper applied in double layer is recommended as a satisfactory insulating medium.

In this connection reference may be made to a series of tests conducted in 1919 at the Armour Institute of Technology, Chicago, to determine the relative heat conductivity of various types of walls. These tests indicated that by the use of building paper or quilting, the loss of heat through a stucco wall of the back-plastered type was less, under standardized conditions, than the loss through the ordinary wood frame wall, covered with sheathing.

Hydrated lime should be specified to the exclusion of lump lime chiefly for the reason that lime which is slaked on the job cannot as a rule be so thoroughly hydrated and so thoroughly mixed in the mortar as the mechanically hydrated product.

The importance of proper and thorough mixing of the ingredients of the mortar cannot be too strongly emphasized. Machine mixing is in all cases to be recommended in preference to hand mixing. The use of hair or fiber is considered optional, and when used the method of incorporation should be such as to insure good distribution and freedom from clots. The maintenance of proper and uniform consistency should be insured by measurement of the water as well as of the other ingredients of the mortar. The question of retempering mortar is one which will bear further investigation.

The question as to number and thickness of coats may be best answered by assuming that each coat of stucco has its own particular function. The scratch coat is the first applied and its purpose is to form an intimate bond and a secure support for the body of the stucco. On metal lath it also serves as a protective coat, and it should therefore be strong and not too lean. The use of hair or fiber is of questionable value.

The function of the second coat (commonly called the brown or straightening coat) is to establish a true and even surface upon which to apply the finish. It forms the body of the stucco and must fill the hollows and cover the humps of the scratch coat.

The finish coat serves only a decorative purpose and has no structural value. Its function is solely to provide an attractive appearance and any mixture or any method of application that may detract from the appearance or in any way injure its permanency should be avoided. Herein lies the argument for lean mixtures, which are more likely to be free from unsightly defects than rich mixtures and are also more likely to improve in appearance under the action of the weather. The finish coat should be as thin as possible consistent with covering capacity and may vary from 1/8 to 3/8 inch in thickness, depending upon the type employed.

It is obvious from the foregoing that first class stucco should be three-coat work, each coat serving its own particular purpose. The bond between the brown coat and the scratch coat needs to be strong in order to carry the weight of the body of the stucco and for this reason it is now considered preferable to apply the brown coat the day following the application of the scratch coat. Except in dry or windy weather little wetting of the scratch coat should be necessary when the brown coat is to follow within 24 hours.

Curing of the undercoats by sprinkling, and protection of finish coats against the sun, wind, rain and frost by means of tarpaulins are always to be recommended. This is not always feasible, however, and the architect should be content to specify and insist upon reasonable precautions. The application of cement stucco in freezing weather should be avoided and in fact temperatures slightly above the freezing point may allow frost to form on a damp wall. The application of stucco under such conditions is likely to result in failure.

Whereas the interval between the brown coat and scratch coat, as recommended above, is relatively short, the interval before applying the finish coat should be as long as permissible under the conditions of the work. The reason for thus delaying the application of the finish is to enable the body of the stucco to obtain its initial shrinkage and a nearer approach to its final condition of strength and hardness, before being covered with the surface coat. A week or more should elapse between the application of the brown and finish coats.

The finish coat should be applied over a damp, but not saturated, undercoat, for excess water is likely to injure the bond seriously. Certain types of finish such as the wet mixtures used for sand spraying or for the "spatter dash" finish, may preferably be applied to a fairly dry undercoat, since suction must be depended upon to prevent streakiness and muddy appearance. The fact that finishes of this type applied in this manner may set and dry out with little strength is not serious. They gradually attain sufficient hardness with exposure to the weather.

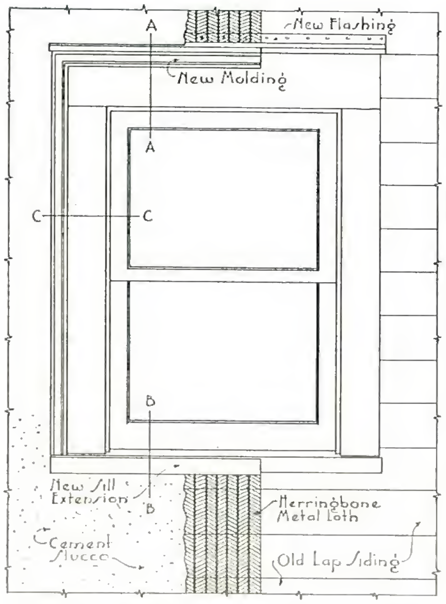
The possibility of defects resulting from the expansion and contraction of rich mortars should be referred to. The chance of such defects occurring must be greatest in the finish coat, which is directly exposed to the extremes of moisture and temperature variations. The hope of overcoming these defects lies mainly in the use of leaner mixtures, in which the tendency to movement is cut down as the proportion of cement is reduced. The problem therefore is to use less cement and at the same time retain the necessary density by improved gradation of the aggregates.

All that may be accomplished in this direction, however, will hardly permit a smooth troweled finish to be used. This treatment produces a concentration of fine material at the surface, which will almost inevitably develop fine cracks. In the course of time these cracks will collect soot and dirt and become conspicuous and unsightly. At best the smooth troweled finish is not to be recommended, and specifications should eliminate all reference to it.

The dash finishes—such as the sand spray, which is obtained by applying a mixture of sand, cement and water with a whisk broom or long fiber brush, or the spatter dash, which is usually a thin mortar containing coarse sand or stone screenings thrown from a paddle, or the roughcast which is a mixture of pebbles and cement grout thrown from a paddle or the back of a trowel—are all relatively rich in cement and all develop fine cracks to a very marked degree, but the rough texture of the surfaces masks these defects, and the type is therefore generally satisfactory and very widely used.

The chief objection to the dash finishes as above described is their rather cold, unbroken cement color, which may be relieved and improved to a considerable extent by the judicious use of mineral pigments. Another means of varying the monotony of the natural grays and whites of the cement is by the use of the dry dash finishes in which clean pebbles or stone chips are thrown against the fresh mortar of the finishing coat while it is still soft. When the dry dash is well selected, and the particles thickly and uniformly distributed over the surface, the finish thus obtained is pleasing and possesses decidedly more life and character than the wet dashes.

The sand-float finish deserves special consideration because it promises to be one of the most satisfactory finishes of the future. Due to the use of rich mixtures the sand-float finish has usually developed defects similar to those experienced with the smooth troweled finishes, differing from the latter only in degree. Sand-floated stuccoes which have been covered with paint are to be found in every community, and this alone is sufficient evidence of unskillful manipulation of this finish and of the unsatisfactory results that have been obtained. In the experiments carried out at the Bureau of Standards, the sand-float finish was found to be most satisfactory on mixtures containing not more than 1 part of Portland cement to 4 parts of fine aggregate, and mixtures as rich as 1:3, with a small addition of hydrated lime were satisfactory as a rule only when the final floating was delayed until the mortar had well stiffened. In this manner the concentration of fine material in the surface was prevented.



STUCCO OVERCOATING ON LAP SIDING
Without Furring Strips.

CEMENT STUCCO OVERCOATING ON LAP SIDING

Herringbone Metal Lath placed vertically as shown and securely attached by Staples.

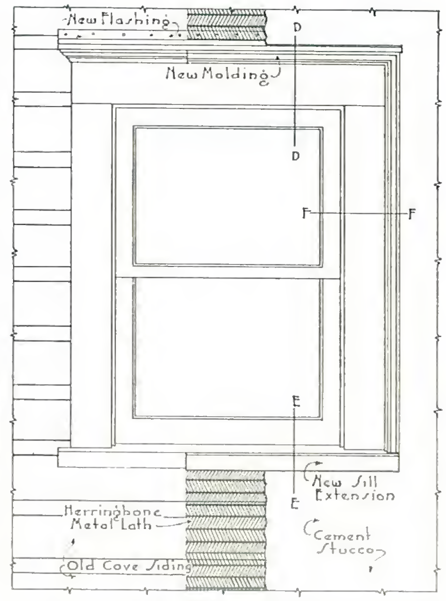
Window and Door Frames may be trimmed out as shown or Stucco finished flush with face of old frames.

CEMENT STUCCO OVERCOATING ON COVE SIDING

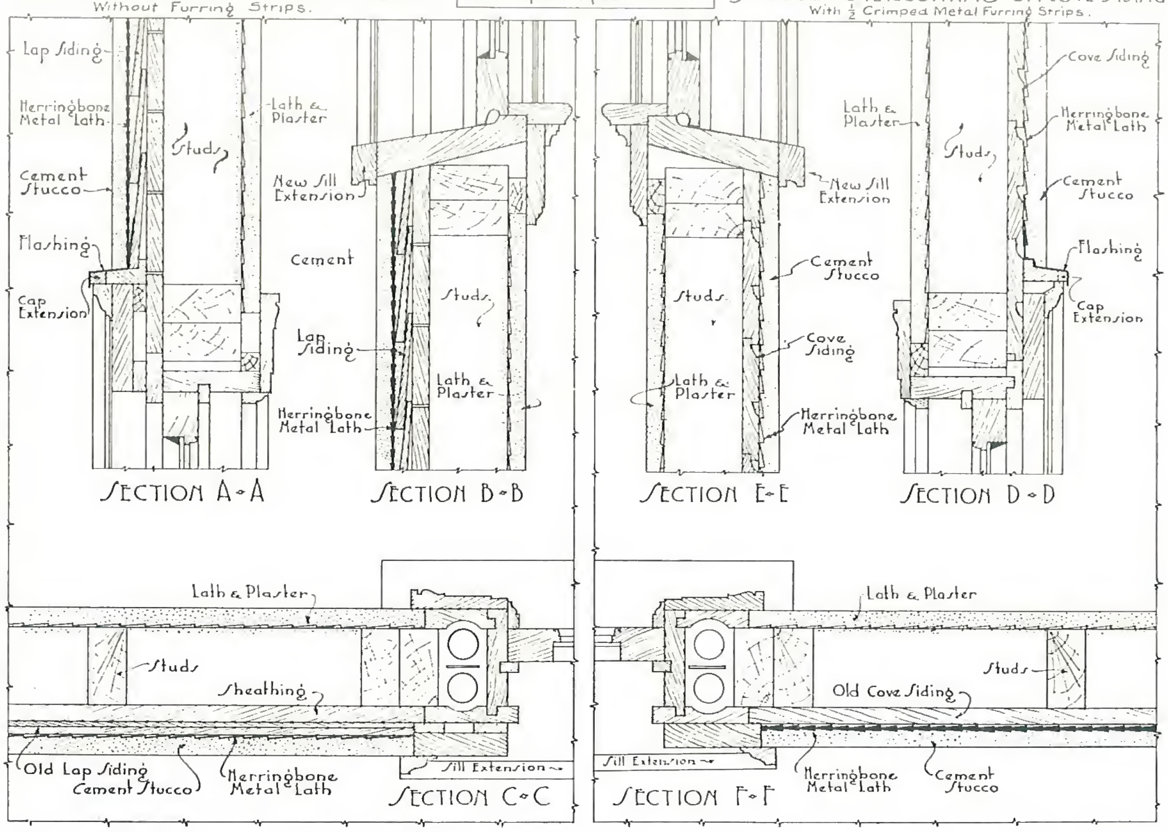
Herringbone Metal Lath to be stapled horizontally over old cove siding, and vertically over lap siding as shown on details.

All door and window trim to be extended so that it will have the proper projection after the overcoating has been applied.

See Complete Specifications



STUCCO OVERCOATING ON COVE SIDING
With ½ Crimped Metal Furring Strips.



The General Fireproofing Building Products Youngstown, Ohio

Details of Stucco Overcoating on Herringbone Rigid Metal Lath

The General Fireproofing Building Products Youngstown, Ohio

Overcoating Old Houses

In every community there are houses built a generation or more ago, whose exteriors have reached a stage where further repairs and painting are both expensive and futile to stop decay. To all outward appearances, these old houses are beyond redemption and it is only a matter of time until conditions will make it necessary to tear down the old structure and build anew.

Yet, it is sometimes a simple matter to so renew these old homesteads as to make them immune to further weathering, render them desirable for occupancy, and preserve them intact for future generations.

Owing to the thoroughness with which the framing of many of these old houses was done when labor was cheap and sound timbers easily obtained, it is discovered upon examination that decay is practically confined to the exterior and that the interior is in a good state of preservation.

A new exterior of cement stucco on Herringbone Metal Lath is the solution to the problem of salvaging the old homestead. Overcoating an old house with metal lath and stucco is done in two ways. If the siding is loose and shaky, it must be removed and Herringbone applied to the studs; but if the siding is in good condition, the metal lath may be applied directly to it and stuccoed.

Overcoating a house with metal lath and cement stucco creates a narrow air space between the overcoating and the original wood siding. By reason of this the decrease in the heat loss through the walls of an overcoated house is very noticeable. A series of tests performed by Prof. Peebles of The Armour Institute of Technology shows that the conductivity of the wall is reduced by about 15 7-10% with a decrease in the coal bill of approximately 13 3-10%. This saving is more than enough to pay the interest on the cost of overcoating the house.

The overcoating of houses with Herringbone Metal Lath and stucco frequently makes it possible to secure a durable and attractive home at a substantial saving over the cost of present day construction. It is easily possible to purchase an old house at a comparatively small outlay and at slight additional expense effect a transformation that is both pleasing and marvelous in its completeness.

Above, Residence of A. Whiteside, Hutchinson, Kansas, before overcoating with stucco.

At right, same residence after remodeling and overcoating with stucco on Herringbone Armco Iron Lath.

Architects, Root & Siemens, Selby H. Kurfiss, Associate, Kansas City.

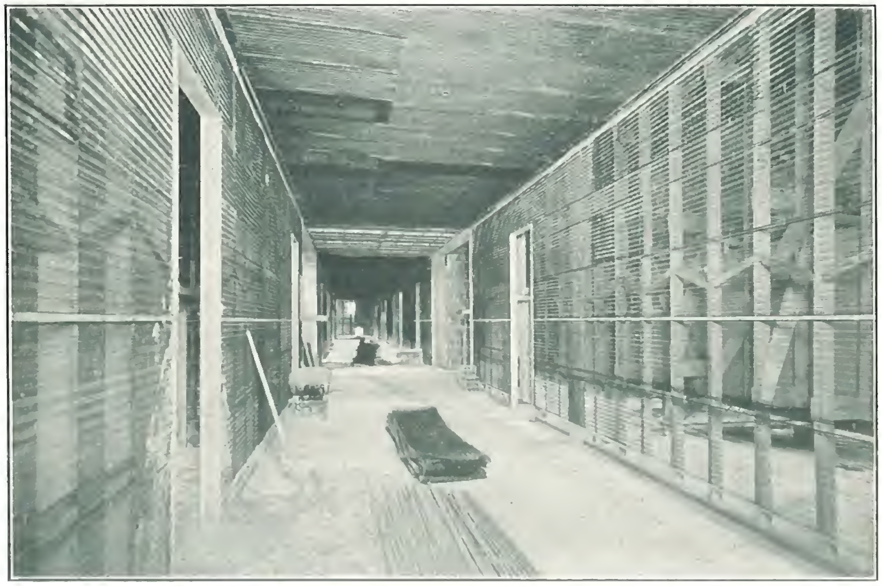
GF Herringbone Rigid Metal Lath

Herringbone is a metal lath with a distinctive mesh. This mesh pattern, which easily distinguishes Herringbone from any other type of plaster base, was adopted not for the purpose of producing a novel effect or for convenience in manufacture but to effect a true economy at every stage in the production of a finished plaster wall.

Herringbone was first designed and then special machinery constructed to produce it. In fact several additional operations not required by more simple patterns are necessary to make Herringbone.

A study of the Herringbone pattern will demonstrate why this metal lath enjoys the popularity it holds among architects, contractors and plasterers in general.

Herringbone Metal Lath is made up of a series of parallel reinforcing ribs running lengthwise of the sheet and connected by short cross strands. The longitudinal ribs lie at an angle to the plane of the sheet and not only serve as supporting members for the lath and plaster but also act first as "baffle plates" to deflect the excess mortar back against the trowel, and then as "shelves" on which the mortar rests and is held in place while setting.



GF Herringbone Metal Lath ready for the plaster.

Herringbone Metal Lath is obtainable in steel—painted, galvanized or Copper Bearing—and in Armco Ingot Iron as follows:

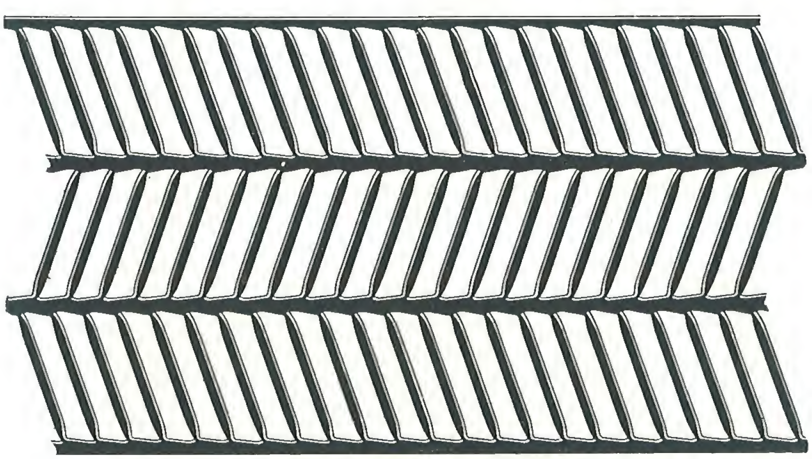
Herringbone Metal Lath (Standard)

Size of Sheets—20¼"x96" (1½ sq. yds.)
Weight (Painted) 2.2, 2.5, 3, and 3.4 lbs. per sq. yd.
Weight (Galvanized) 2.5 and 3.4 lbs. per sq. yd.
Weight (Copper Bearing) 2.2 and 3.4 lbs. per sq. yd.
Weight (Armco) 2.2, 2.5, 3 and 3.4 lbs. per sq. yd.
Packed 15 sheets—22½ yds. to bundle.

Herringbone is the most rigid metal lath obtainable. Rigidity makes Herringbone easy to handle and apply by one man without a helper. It requires no stretching and does not sag between supports; saves mortar and the workman's time in plastering and allows wider stud spacing by about 25 per cent.

The interlocking edges of Herringbone are another distinct economy feature. No side-lapping of sheets required. This feature alone saves an inch or more for every sheet applied. A common adage and one literally true is "A yard of Herringbone on the wagon is a yard on the wall."

Herringbone is a self-furring lath. The slanted ribs keep it away from studs far enough to allow plaster to key firmly behind it.



Section of Sheet of Herringbone Metal Lath
Sheets—20¼ in. x 96 in. (1½ sq. yds.) Packed 15 sheets—22½ yds. to bundle

GF Herringbone Doublemesh Metal Lath

GF Herringbone Metal Lath used for this beautiful interior.

This lath has all the advantages of Standard Herringbone and in addition requires less plaster for the scratch coat. It has double the number of meshes of any former type of Herringbone for the same area with a corresponding decrease in the size of the openings. Herringbone Doublemesh Lath has the smallest mesh of any expanded metal lath on the market, at the same time being the most rigid. It is therefore the most economical lath to buy, effecting a big saving in both the labor of erecting it and in plastering.

The place for plaster is on the lath—not on the floor between the studding. Lath that fails to catch the plaster on the key side, and allows it to be forced through to be wasted, is the most expensive kind of lath to use, even though it may cost less in the sheet.

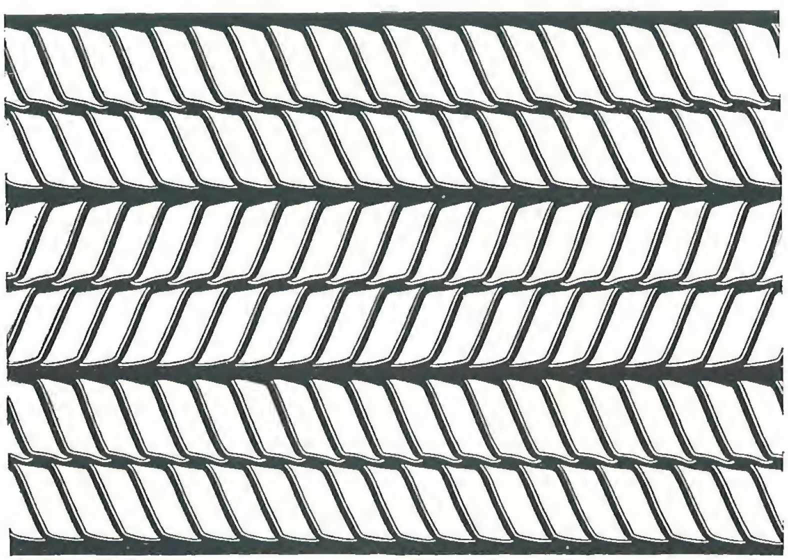
The sloping, shelf-like ribs of Herringbone Doublemesh Lath and the small size of the openings are the two things that have popularized this lath among plastering contractors from the very start.

The small mesh means less plaster to form the key—a thinner scratch coat. With a thinner scratch coat, less time is required for the plaster to set.

Herringbone Doublemesh Lath now opens the way to a more general use of Metal Lath in dwelling houses and other wood-joisted structures. It places metal lath and plaster, with all its proven advantages of fire protection and crack elimination, within reach of the home builder of limited means.

When plastered on one-half inch grounds, the cost of the completed job including lath and plaster is very close to that for wood lath and plaster on $\frac{5}{8}''$ grounds—the results are far superior.

Weight per Square Yard				Size Sheets Inches	Sheets per Bundle	Yards per Bundle
Painted	Galvanized	Copper Bearing	Armco Iron			
3.0	......	3.0	3.0	15x96	18	20
3.4	3.4	3.4	3.4	24x96	9	16



Section of Sheet of Herringbone Doublemesh Lath—Actual size of mesh

Herringbone Made from Armco Ingot Iron

Realization of the enormous waste caused through corrosion of the modern metals, prompted the American Rolling Mill Company to make an exhaustive research in an effort to discover a practical method of producing pure iron for commercial purposes. It was found that the modern steels contain high percentages of impurities such as carbon, manganese and sulphur. The presence of these particles promotes an action which is similar to that taking place in a battery; the foreign substances, acting as opposite poles, with the aid of the ever-present mineral salts, induce an electric current, producing electrolysis, thus facilitating oxidation. The old and durable product having but slight admixture, was, relatively speaking, a pure iron less capable of electrolytic action.

Woolworth Building, New York City
Cass Gilbert, Architect
Herringbone Armco Ingot Iron
Used for Ceilings

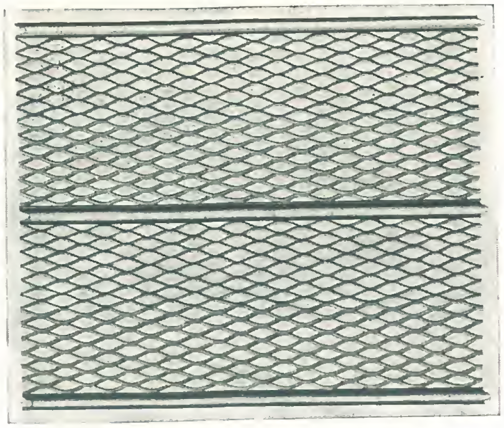
The solution of this problem is Armco Ingot Iron. In this, the total of impurities is *less than one-sixth* of one per cent, a standard never before obtained. Every phase of its production is so scientifically guarded, to the end of producing perfect material, that the name "ARMCO" is synonymous with "rust-resistance."

While under ordinary conditions, metal lath properly painted or galvanized and embedded in plaster is effectively protected from rusting, there are times when it is considered desirable, because of exceptional conditions such as a salt sea or acid atmosphere or where certain kinds of patent plasters are used, to take the added precaution of using GF Metal Lath made from sheets of Armco Ingot Iron.

Although Armco Ingot Iron Lath is used for both plaster and stucco work, it is especially preferred by some architects for the latter, as its use positively insures permanency at but a slight additional expense.

Herringbone and Key Lath are obtainable in Armco in all weights, and Diamond Rib Lath in the 3.5 lb. weight only. Metal Lath of Armco is identified by its red paint coating.

New Municipal Building
McKim, Meade & White, Architects
Herringbone Armco Ingot Iron
Specified and Used



Section of a sheet of GF Diamond Rib Lath. Full size sheets are 24 in. wide and 96 in. long. Ribs are spaced 4.8 in. c-c.

Weight per Square Yard

Painted Steel	Cop.-B'ng	Armco
3.0 lbs.	3.0 lbs.	....
3.5 lbs.	3.5 lbs.	3.5 lbs.
4.0 lbs.	....	....

GF Diamond Rib Lath

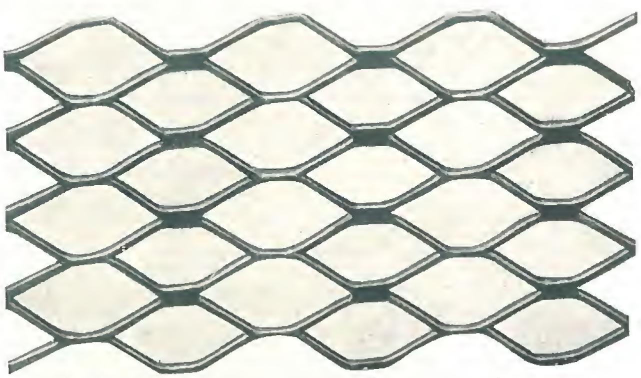
GF Diamond Rib Lath is especially adapted to maximum spacing of joists and studding; its longitudinal reinforcing ribs giving maximum rigidity between supports. This construction is more economical than the use of a less rigid lath at a lower cost. The expense of filling the depressions and the additional concrete required amounts to more than the extra cost of the more rigid lath.

Loss of concrete by dripping through the lath is another waste. Due to the small size of the Diamond mesh, this will be minimized where GF Diamond Rib Lath is used. A perfect key is formed without waste of plaster where this lath is used for ceilings.

Shipping Data

Sheets 24'' wide (c-c outside ribs) x 96'' long.
Ribs spaced 4.8 c-c.
Area of Sheets 1 7-9 square yards.
9 Sheets per bundle.
16 yards per bundle.

GF Key Expanded Metal Lath



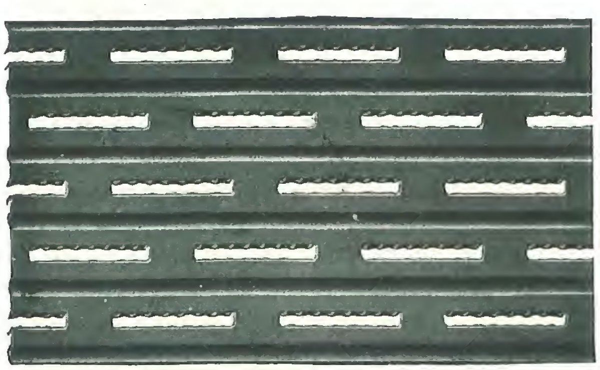
Steel (Painted) 2.2, 2.5, 3 and 3.4 lbs. per sq. yd.
Steel (Galvanized) 2.5 and 3.4 lbs. per sq. yd.
Steel (Copper-bearing) 2.2, 2.5, 3, 3.4 lbs. per sq. yd.
Armco, 2.2, 2.5, 3 and 3.4 lbs. per sq. yd.

Key Expanded Metal Lath is adapted to all kinds of work, but is especially suitable for curved surfaces, due to its uniform pliability.

The flat ribs make Key Lath easy to handle and erect. The small mesh insures its complete envelopment in plaster, with the use of a minimum amount of material. The large sheets reduce the number of laps and save both labor and material.

Key Lath is furnished in steel, painted or galvanized, and in Armco Ingot Iron. No unpainted lath. Sheets—24 x 96 inches—1 7-9 square yards. Packed 9 sheets—16 yards to the bundle. Furnished in weights as indicated.

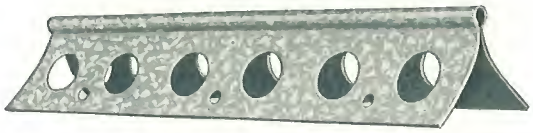
Genfire Sheet Steel Lath



A metal lath to be used where plaster economy is a feature. Takes even less plaster than wood lath; is fireproof, vermin proof and gives a surface free from crack and stains.

Sheets, 13½ x 96 inches—1 square yard.
Sheets, 24 x 96 inches—1 7-9 square yards.
Packed, 9 sheets to a bundle.
Weight, 4.625 pounds per square yard.
Always furnished painted.

GF Corner Beads



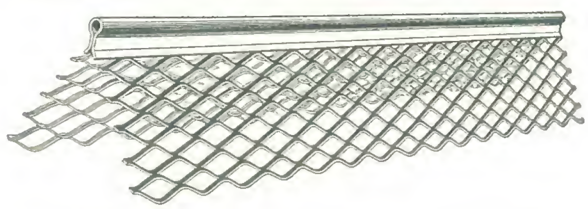
No. 500 GF Corner Bead

A short-wing corner bead adapted to all nail-on work. Nose well formed and wings are unusually rigid. Used largely for residential work over wood or metal lath where protection with economy is desired. With clip may be adapted to fire-proof surfaces of brick or tile.

Lengths, 6 ft., 7 ft., 8 ft., 9 ft., 10 ft., 12 ft.

Packed 10 pieces to bundle—10 bundles to crate.

Crated weight, 175 lbs. per 1000 ft.



GF Expanded Corner Bead

GF Expanded Corner Bead not only protects exposed plastered corners from severe impact, but also reinforces the plaster for a safe distance back from the corner. Plaster keys through the steel mesh work, giving a continuous attachment the full length of the bead. Made from galvanized steel in 6 ft., 7 ft., 8 ft., 9 ft., 10 ft., and 12 ft. lengths. Always shipped crated. Bundled 10 pcs. per bundle, 10 bundles per crate. Crated weight, 230 lbs. per 1000 ft. approximately.

Specially made from pure zinc sheets for extremely corrosive conditions.

Cold Rolled Channels

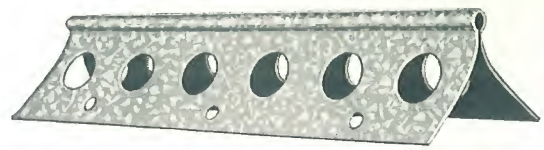
Illustrations show actual sizes of Channels

The only formed steel channels on the market with square corners. This means that these channels will not roll or turn in course of their erection or twist when the lath is being applied. The right-angle position of the legs insures that the channels will remain firmly in position whether used as furring or studding. They are rolled absolutely straight and true, are easy to handle and much more economical than the ordinary hot rolled type.

DIMENSIONS		Approx. Weight per 1000 lineal feet
$\frac{3}{4}$'' wide	Leg $\frac{11}{32}$'' high	276 lbs.
1'' wide	Leg $\frac{3}{8}$'' high	332 lbs.
$1\frac{1}{2}$'' wide	Leg $\frac{3}{8}$'' high	442 lbs.
2'' wide	Leg $\frac{7}{16}$'' high	580 lbs.

PERFORATED CHANNELS

DIMENSIONS		Approx. Weight per 1000 lineal feet
$1\frac{1}{2}$'' wide	Leg $\frac{3}{8}$'' high	400 lbs.
2'' wide	Leg $\frac{7}{16}$'' high	547 lbs.



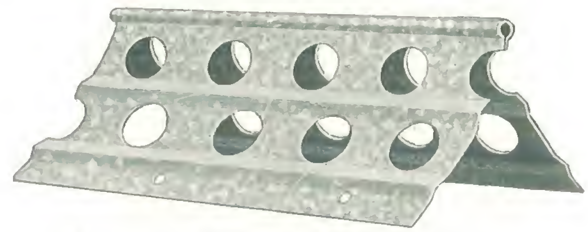
No. 505 GF Corner Bead

A wider winged bead than No. 500. Used for both nail-on work and on fireproof surfaces. Under most circumstances can be used for latter without clip. This bead is recommended where beads of highest quality are required.

Lengths, 6 ft., 7 ft., 8 ft., 9 ft., 10 ft., 12 ft.

Packed 10 pieces to bundle—10 bundles to crate.

Crated weight, 200 lbs. per 1000 feet.



No. 600 Extra Wide Flange Corner Bead

No. 600 is an extremely wide flange corner bead made of heavy high-grade galvanized stock. Quality and efficiency are features of this bead and wherever it is used a high class job is assured.

Lengths 6, 7, 8, 9, 10, and 12 feet.

Weight 330 lbs. per 1000 feet.

Made from 26 gauge galvanized stock.

GF Wall and Floor Peds

Peds are "spot grounds" for attaching wood and metal trim to walls, and floor screeds to concrete floors. They supplant old-fashioned methods of grounding that are costly in time, labor, and material.

Each Ped consists of a round nailing block of wood securely clinched into a circular metal disk which has holes punched in it. Through these holes plaster—by which it is applied—is forced. The completed plaster wall holds the Ped firmly in place.

Peds for walls greatly simplify the placing of baseboards, chair rails, plate rails, and picture moulding. They also afford a firm foundation for plumbing fixtures, hand rails, electrical fixtures, and telephone boxes, and for attaching wallboard or plasterboard over masonry walls. Wall Peds adhere tightly to any metal lath, brick concrete, gypsum block or hollow tile wall, and hold trim and fixtures solidly and securely.

Packed in boxes of 1000, assorted sizes as follows:

Floor Peds—900-$\frac{3}{4}$ in., 50-$\frac{1}{2}$ in., 50-$\frac{3}{8}$ in., approximate weight 73 lbs. per box.

Wall Peds—900-$\frac{1}{2}$ in., 50-$\frac{3}{4}$ in., 50-$\frac{3}{8}$ in., approximate weight 59 lbs. per box.

INDEX

A-409-5

CP. 15M 6-26 Printed in U. S. A.